

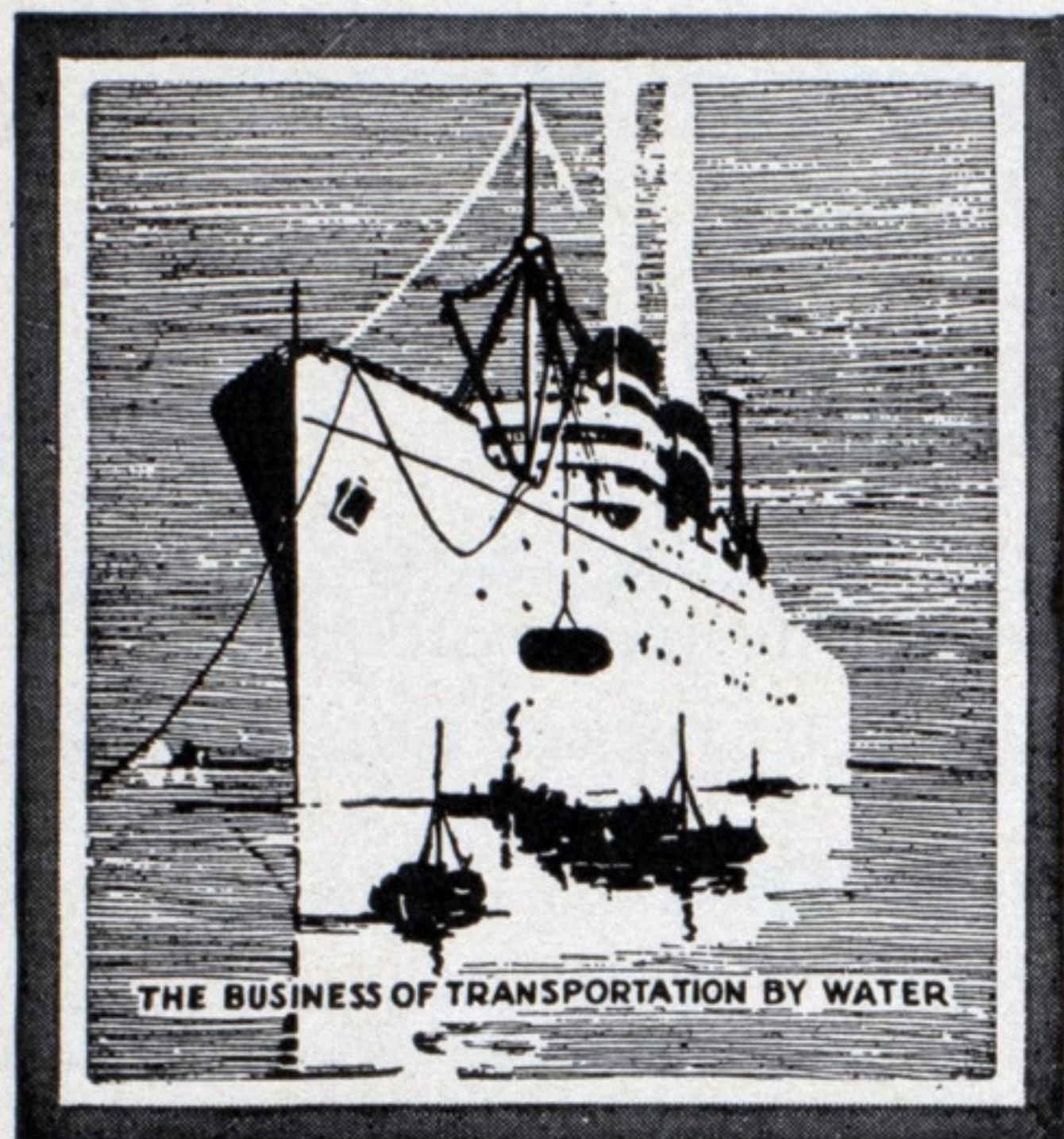
# Marine Review

*The National Publication Covering the Business of  
Transportation by Water*

CLEVELAND

FOUNDED 1878

NEW YORK



Published monthly by  
The Penton Publishing Co.  
Cleveland, Ohio, U. S. A.

Cleveland Office, Penton Bldg.  
A. H. Jansson, *Editor*  
H. O. Taylor, *Advertising Manager*

Chicago Office, 1347 Peoples Gas Bldg.  
L. C. Pelott  
Fred B. Fletcher

New York Office, 220 Broadway,  
Joseph Fuller, *Eastern Manager*  
E. C. Kreutzberg  
B. K. Price

Pittsburgh Office, 507-8 Oliver Bldg.  
S. H. Jasper  
W. G. Gude

Washington, D. C. Office,  
1020 National Press Building  
L. M. Lamm

London Office, Caxton House  
Westminster, S. W. 1  
Vincent Delpont

## CONTENTS

Vol. 62

March 1932

No. 3

	Page
Editorials .....	9
Unfair Competition, a Handicap to Merchant Marine By H. B. Walker	12
Fifth National Merchant Marine Conference .....	13
By Lynne M. Lamm	
Modern Rudder Design and Analysis .....	17
By John Tutin	
Fixing Panama Tolls and Measurement .....	18
North German Lloyd Founded 75 Years Ago .....	19
Seadrome Project Presents Unique Design Features By A. H. Allen	20
Handling Railroad Cars on Ocean Freighter .....	23
By E. E. Pierson	
Arc Welding Used in Building Barges and Small Craft By C. M. Taylor	24
Current Supply to Battleship Fire Control .....	26
By Wm. Hetherington Jr.	
Maritime Law—Late Decisions .....	28
By Harry Bowne Skillman	
Ports—Marine Business Statistics Condensed .....	29
New Construction Ordered and Contemplated .....	30
Bunker Prices—Domestic and Foreign .....	31
What the British Are Doing in Shipbuilding .....	32
New Two-Cycle High Speed Diesel Engine .....	33
Stevedoring and Dock Management Progress .....	34
Leading Coastwise Lines Cut Handling Costs By H. E. Stocker	
Washington Maritime Interests Organize By R. C. Hill	
Jettison Obsolete Methods in Cargo Handling By H. E. Stocker	
Useful Hints on Cargo Handling .....	37
Books—Late Marine Reviewed .....	38
Up and Down the Great Lakes .....	39
Equipment Used Afloat and Ashore .....	40
Personal Sketches of Marine Men .....	42
Capt. Alby O. Ackard, Supt. Carnegie River Fleet By W. G. Gude	

MARINE REVIEW is a member of the Audit Bureau of Circulations, Associated Business Papers Inc. and the National Publishers Association. Entered at the Post Office at Cleveland, Ohio, as Second Class Matter, under the act of March 3, 1879. Copyright 1932 by The Penton Publishing Co., Cleveland, O.



Subscription United States and its possessions, \$3 per year; single copies 35 cents. Back numbers over three months 50 cents. Subscription Canada \$4.00; Great Britain and other Foreign Countries, £1-4 shillings. Cable addresses: Penton, Cleveland, and Irotrapein, London.

*The A. B. P. is a nonprofit organization whose members have pledged themselves to a working code of practice in which the interests of the men of American industry, trade and professions are placed first—a code demanding unbiased editorial pages, classified and verified paid subscribers, and honest advertising of dependable products.*



# « EDITORIAL »

---

## Learning to Work Together for Merchant Marine

**T**HE most important thing accomplished at the successive national conferences on the merchant marine is learning the valuable lesson of working together effectively for the common good of the industry. We say this lesson has been learned. Maybe this is too optimistic. But one thing is certain; evidence of unity and co-operation in promoting the best interests of the merchant marine as a whole were more convincing to the observer at the fifth national conference on the merchant marine held in Washington, Jan. 27-28 than at any previous conference. It is cumulative. This spirit of co-operation becomes stronger the oftener it is invoked.

Always in the past one of the disconcerting aspects to the legislators in congress has been the diametrically opposed views presented by the various interests. The coastwise operator has had little in common with the inter-coastal operator while both of these groups have felt that they have had nothing in common with the overseas operator. The operator on the Great Lakes has been so completely removed from the sphere of activities of all three groups that any understanding or sympathy exhibited in this quarter has been little more than that of any intelligent discerning citizen, having essentially nothing to do with the fact that he also is an operator of vessels.

To bring together all of these groups, each with its own particular outlook on the needs of an American merchant marine and making them all realize that fundamentally there are many common bonds of interest and that these may be best advanced by complete co-operation, is a real accomplishment of the annual national conferences which were initiated by the shipping board under the direction of Chairman T. V. O'Connor. The leading figures of the various groups have had a chance to meet and to become acquainted with each other. From this alone much good is bound to come.

Specific instances of this growing unity are not lacking in the recommendations agreed

upon at the last conference. These are embodied in the report submitted by the national standing committee which had been appointed at the conference a year ago. A wide range of subjects is covered, among which are, how to increase patronage for American ships; adequate mail pay for high speed ships; government aid to ships not benefited by mail contracts; foreign competition in indirect trade; safety of marine workers; Panama Canal tolls and measurement; safety of life at sea; proposals of railroads for ownership of water carriers and regulation by interstate commerce commission; construction of naval vessels in private American yards; and cost differential in the operation of United States versus foreign ships.

Subcommittees made up of members of the standing committee were appointed to study and to report on each of the above subjects. These reports were submitted, as prepared, to the fifth national conference for action by the conference. The standing committee suggested that the information, conclusions and recommendations contained in the subcommittee reports should receive careful study as a basis of further action which may be taken with reference to the subjects dealt with. In the meantime the committee distributed copies of the resolutions adopted to representative steamship owning and operating associations, public officials and members of congress on committees having to do with legislation affecting the various subjects considered.

In the matter of the codification of the navigation laws the shipping board has directed its bureau of law to make this subject one of primary concern so that the proposed codification, which is a much needed reform for clarification and modernization, may be enacted by congress.

Articles elsewhere in this issue cover in some detail the activities of the national conference, and the specific recommendations made should be supported by all those who believe in an adequate and effective American merchant marine. By co-operative effort of this sort with the benefit of leadership it need no longer be said in congress that the responsible representatives of the merchant marine are themselves



at odds in regard to the measures needed for its promotion and protection. The conference, therefore, is doing a very important work in serving as a medium for study and agreement upon the best ways and means in accomplishing beneficial results, and in effectively presenting its conclusions not only to the executive and legislative branches of the government but also to the public.

## Assessing Panama Canal Tolls

THE figures published elsewhere in this issue show that even in the year 1931, with the depression in full effect, the total returns in tolls for commercial transits of the Panama canal were over \$22,000,000, approximately \$5,000,000 less than for the year 1929. Allowing a reasonable sum annually in connection with the operation of the canal as a legitimate expenditure in national defense and a fair proportion of the capital cost for the same purpose, this revenue, during a year of extraordinarily reduced business the world over, would seem to be more than amply sufficient for all proper charges, including capital, upkeep and operation, to make the canal essentially self-supporting.

Under no circumstances should any action be taken in connection with the assessment of tolls which would increase the present outlay of steamship companies now using the canal. If it were possible under the treaty with Great Britain to do so, we would recommend preferential rates for ships flying the American flag, but since this is not possible we are opposed to any modification of the rules and regulations governing tolls which would have the effect of increasing the already heavy burden carried by American ships.

The method now in vogue of fixing tolls, on either measurement by Panama canal rules or by United States registered tonnage, undoubtedly involves extra work for the officials charged with collecting the tolls and it is also an inconvenience to vessels using the canal as they all must be measured both ways in order to take advantage of minimum charges. But it is better to have this system than to change to a single standard of measurement if such change is to mean an increased cost of transiting the canal. A single standard would be preferable to the ship owner as well as to canal officials, but the shipowner would rather get along with this cumbersome arrangement than face the possibility of paying larger tolls.

If a change to single standard is to be made

and that single standard is to be existing Panama canal rules, the tolls per unit of measurement should be sufficiently reduced so that it would mean no increase for any ship for the service now rendered. To do this would mean a reduction in the present rate of tolls based on Panama canal measurements. Such a blanket reduction would mean a reduction in the total amounts collected under the present system. It would greatly simplify matters if this were done and any saving accruing to American ships would be a help to which they are entitled in view of the large sums they now contribute to the operating and upkeep costs of the canal.

All the facts needed for an intelligent consideration of this question are readily available and early action should be taken by congress to simplify the present situation relieving shipowners and officials alike from the complications of a dual system while at the same time reducing rather than increasing the present cost of using the canal. Much work has been done in all lines in the cause of standardization. Here is a prime example of the necessity of standardization, but standardization here as elsewhere should have as its objective cost reduction, not increase.

## Co-operation in Maritime Affairs

MORE than ever today the world is in need of leadership, intelligent, unselfish aggressive leadership, if we are to make any real headway toward the solution of the many difficult problems in our maritime affairs. On the sound theory that there is a common bond between all those who make a living out of shipping activities, from longshoremen to presidents of steamship companies and that the true interests of all are the same, the shipping federation recently organized in the state of Washington is a step in the right direction.

Its ultimate success, in the final analysis, in spite of all obstacles, will depend mainly on the type of leadership. In this respect the Northwest is fortunate in having a man tested and tried under the most difficult circumstances, a man who understands the viewpoint of both employe and employer. A man who has demonstrated in a practical manner the unity of interests of all and that fair play and a square deal are the only permanent bases for the success of any industry.

This man is Frank P. Foisie who has the intelligence to see the right way, and also the courage to fight for it against all opposition. With him as manager and with the co-opera-



tive spirit which he has helped to build up, the success of the new Shipping Federation of the state of Washington is assured.

---

## Build Warships in Private Yards

**M**ANY navy yards are almost as old as the government itself. They were located in the early days to meet the then needs of a comparatively small navy of wooden sailing ships where these ships could be rigged and outfitted for service and to serve as shore bases for supplies, armament and personnel. The primary function of the navy yard then and now is to serve as an adequate base for naval operations in time of peace and war. In time of war this function becomes a particularly important one and the readiness to serve this purpose is severely handicapped if the navy yard takes on the additional function of a shipyard for naval construction. In time of war all the facilities and personnel would be needed for the primary function and any new shipbuilding going on would probably be discontinued or at best be greatly restricted.

It is plain that the allocating of new shipbuilding to navy yards is based entirely on political considerations. It cannot be justified on any grounds of economy or efficiency for the naval establishment. It actually costs more to build in a navy yard than to have a private yard build the ship for the government. There are none of the incentives for doing the work quickly and at the lowest possible cost that there are in private yards. The responsible officers in charge of building a ship in a navy yard are not faced with the problem of making both ends meet, of meeting a specific time schedule of delivery nor of making a profit for the yard. Consequently the whole system is economically wrong.

In giving new shipbuilding to navy yards, other and serious considerations must be faced. The combined facilities of all the navy yards in new shipbuilding is utterly inadequate for taking care of the new shipbuilding needs of a first class naval power. The country must depend on private shipyards even in ordinary times, while in times of emergency fully equipped private shipyards with experience in naval building are a vital necessity.

Private shipyards cannot continue in business and keep up the necessary standards of personnel and plant unless sufficient encouragement is given by orders for naval ships.

Politics should not be allowed to play havoc with national security. It is as much a matter

of preparedness to keep our private shipyards in a state of health and activity as it is to train our men and officers in their duties with the fleet. Each is an essential part of our naval establishment in a time of emergency and each must be given the opportunity for preparation in time of peace. Let us forget politics in this case. Let us apply commonsense and invoke duty which puts national security above any selfish local interest.

---

## Patronage for American Vessels

**M**ETHODS for increasing patronage for American ships were given special consideration by a subcommittee of the national standing committee on the merchant marine. A solution of this problem would undoubtedly do more to help to build up an efficient, virile American merchant marine than any other one thing. Until quite recently the inadequacy of American flag services made it difficult to do any effective work along this line. Fortunately this condition has materially changed since the merchant marine act of 1928 made it possible to organize regular service with efficiently manned and well found ships in many trade routes from the United States to all parts of the world. No less than 44 mail contracts have been awarded in as many routes.

Some organized method of national publicity should be used. A plan, comprehensive in scope carefully worked out by a competent advertising and publicity counselor, is the first step. In any case, having a plan, the next step would be to find the means to carry it out. This might be done by a pro rata assessment according to gross tonnage in the various fleets including a contribution from the shipping board.

It is useless to go at this problem in a hit or miss way. The skill of the best existing agencies should be applied to increasing patronage for American ships. We now have something very definite to sell. The next thing to do is to sell it and this cannot be done by half way measures. Make use by all means of every opportunity for placing before shippers in specific terms the type, quality and charge for services.

Individually, let each company through its own personnel apply the most energetic methods possible for increasing business. Co-operatively, let all the companies combine in support of a well conceived plan and there will be no question of success in getting the American people to patronize their own country's ships wherever possible in preference to any foreign ships. This must all be done on the basis of at least an equality of service.



# Unfair Competition, a Handicap to the Merchant Marine

By H. B. Walker\*

**N**O NATION other than the United States in times of peace transports its men and supplies for military stations outside its borders on government transports. It is admitted that when the transport services of our army and navy were started there was not the frequency of service which private lines maintain today and in many cases no service at all to the points where the army and navy desired to convey their men and supplies. This condition no longer exists and lack or infrequency of service cannot be said to be a reason for their continuance. There is a far greater frequency of sailings maintained by private lines than the transports can supply. These lines are entirely able to take care of the transportation needs of the war and navy departments at a cost substantially less than the cost of the maintenance and operation of the transports.

## Transportation Would Cost Less

If the army and navy departments were to transport their personnel and supplies by the private lines there would be a material saving to the government in transportation costs. From the best information which we are able to obtain, if the transportation of the personnel of the army and their supplies were turned over to the private lines, there would be a saving of from two to two and one-half million dollars annually in addition to more frequent service.

There is also the indirect aid which would accrue, and this is also true with respect to naval supplies, of an increased purchasing market. Private lines not only operate their vessels from the American ports from which the army and navy transports operate, but from a great many other ports. If their freight was to be handled by the private lines, a great many more suppliers in the United States would have an opportunity to bid, knowing that they would not be barred because of higher inland freight rates than other competing manufacturers and suppliers enjoy. Shippers in the Middle West would have an opportunity of bidding and shipping via the most economical

route, where now if they bid they are compelled to ship to the ports from which the army and navy transports depart, and figure in their bid the cost of the inland transportation. From the point of view of the manufacturer or supplier it would, therefore, put all on a basis as nearly equal as their location to the various ports will permit.

This fact has been recognized by the Mississippi Valley association which at their thirteenth annual meeting at St. Louis, Nov. 23-24, 1931, adopted the following:

"We note with regret and disfavor the continued operation of army and navy transports out of the port of New York and San Francisco, and of the government-owned Panama Railroad Co. steamship lines out of New York. These services are unnecessary and uneconomic and constitute a geographical discrimination against the Gulf ports and the producing interests of the Mississippi valley."

The Middle West Foreign Trade committee, in annual convention at Louisville, Ky., Oct. 27 and 28, 1931, adopted a resolution favoring the enactment of legislation:

"To discontinue the government-owned Panama Railroad Steamship Co. and the army and navy transport services. Government-aided private American ocean lines and the remaining unsold shipping board lines furnish adequate service in all trades and there would seem no justification for maintaining the Panama, army and navy services by the government. Any services which it is necessary for the government to maintain until private enterprises can take them over should be under control of the shipping board."

## The Panama Railroad Steamship Line

With respect to the Panama Railroad Steamship line it can be said that there was a real need for the service it rendered at the time of its commencement. This service today is operated in competition with private lines without the slightest justification. They not only carry government freight but furnish very virulent competition for the carriage of private freight. As a matter of fact, this line not only engages in

the transportation business between the Panama canal and New York, but until recently operated a service down the West coast of South America, and since its withdrawal has placed the boats in the trade between the Canal, Haiti, and New York. There is no fair reason for making the ports of Haiti ports of call as there is now and has been for some time a service between New York and Haiti which has been able to fully take care of the requirements of the trade. The fact that the Panama Railroad Steamship Co. is accepting freight for these ports makes only more difficult the operation of the privately-owned line in this trade.

This statement is equally true with respect to the business carried on by the Panama Railroad Steamship line to the Canal Zone. In normal times there is in addition to the lines regularly serving the Canal Zone practically an intercoastal sailing a day from New York and numerous sailings to and from other ports. These services are more than ample to take care of the needs of the canal. As a matter of fact, the Panama Railroad Steamship line here again not only carries government freight but its extends its activities to competition with the regularly established lines for commercial freight. To what extent this is true may I quote from a statement showing the freight tonnage carried to and from various ports by the Panama Railroad Steamship line during the fiscal year ending June 30, 1931:

## Private Freight Is Carried

The total southbound movement of government freight equaled 60,530 tons and produced \$404,225.22 in revenue, as against a total southbound movement of 63,679 tons of commercial freight producing \$479,729.95 in revenue. Northbound there was a total movement of 795 tons of government freight producing \$9,689.23 in revenue, as against a total northbound movement of 38,460 tons of commercial freight, producing revenue amounting to \$287,794.97. The total movement, both north and southbound for the year equaled 163,463 tons, of which private freight totaled 102,139 tons and government freight 61,325 tons, the total freight revenue being \$1,181,439.37, of which commercial cargo paid \$767,524.92 and government cargo \$413,914.45.

These figures speak for themselves and show very definitely, that not only is there no real value to the government in a continuance of this service but that it constitutes a serious handicap to the private lines operating in this trade. This line is being operated as a loss to the government and in the interests of economy should be discontinued, together with the army and navy transport services, without delay.

\*Abstract of an address by H. B. Walker, president of the American Steamship Owners' Association before the Fifth National Conference on the Merchant Marine, Washington, Jan. 27-28, 1932.



# Fifth Merchant Marine Conference

## Unites Efforts to Aid American Shipping

By Lynne M. Lamm

*Washington Correspondent, Marine Review*

**P**ERHAPS the outstanding achievement of the fifth national conference on the merchant marine, held in Washington, Jan. 27 and 28, under the auspices of the United States shipping board, was the passage of a resolution authorizing the chairman of the board to appoint a committee to work out details of a new national organization or "trade association" to be composed of the varied interests of the merchant marine. Part of this organization would be used to inform the American people of the needs of the merchant marine.

This fifth conference, held in the spacious building of the United States chamber of commerce, attended by most of the well known shipping interests of the country, was declared at its conclusion to have been a great success.

In addition to a number of important resolutions passed, the conference approved a set of resolutions adopted by a committee appointed at the last conference calling for congressional co-operation in the solution of problems confronting American shipping.

### Safety of Life at Sea

The conference adopted a resolution recommending the ratification by the senate of the international convention of the safety of life at sea, signed in London in 1929. A resolution was also adopted calling on the shipping board to urge congress to bring about a moratorium on construction loan and other debts due the government from shipping companies for the period of the depression. It declared that the decline in international trade has so severely affected American shipping "that the very existence of some of our established services has been threatened.

Another resolution adopted endorsed the bill in the house of representatives providing a differential to enable shipbuilding organizations on the Pacific coast to compete with shipbuilders on the Atlantic coast. The conference opposed the reduction of appropriations for the maintenance of channels in the Panama canal.

In a short talk, Senator Copeland of New York scolded the shipping industry for not showing "horse sense" in legislative matters. He

warned that unless congress is better informed of the industry's problems, it cannot expect the merchant marine to be properly protected. He expressed approval of a government moratorium on loans to shippers.

The conference went on record after this "scolding" as opposing senate bill No. 7 to prevent aliens from entering the country as seamen in some of its provisions. It was then being discussed on the floor but due to the resolution adopted it was sent back to the committee by the senate for further consideration. Senator Copeland has introduced a substitute bill. This substitute was



**T. V. O'Connor**

*Chairman, United States Shipping Board*

explained to the conference by Edward H. Duff, Washington representative of the Steamship Owners' association. He said that it provides that every ship entering an American port must take back the same number of seamen that it brought in.

Chairman O'Connor of the shipping board told the conference that his body has tried to be as helpful to the shipping interests of the country as legally possible. In his welcoming address to the conference Mr. O'Connor said:

### Address by Chairman O'Connor

**T**HE shipping board extends a hearty welcome to the members of this conference, the fifth of its

kind to be held. When we look back four years and remember the conditions that then prevailed, we must all realize the important part these annual meetings have played in bringing about closer relations between the various interests that make up the American shipping industry.

At our first conference it was considered a remarkable feat to have brought you gentlemen together for a friendly discussion of the many problems then confronting us. Remember that there had been no outstanding national conference up to that time. Indeed, there seemed to be a very general impression that the ship-operator, the shipper, and the insurance man, for example, each spoke a different language, and that it would be quite useless to bring them into a conference-room and expect them to understand each other.

### Seriously Affected by Depression

We have shown the falsity of this idea, for our annual gatherings have demonstrated that we all speak the same language; that we all have the same objective; that differences of opinion for the most part concern the details, rather than the main outlines, of our work; and that the best way to accomplish our aims is by the fullest co-operation on the part of everyone. Our conferences have certainly resulted in improved team-work, not only between your various groups, but between the whole industry and the shipping board. They must therefore be credited with having simplified many of the tasks we have been called upon to perform since the first conference was held.

During the past year our young and growing merchant marine has been severely tested by the economic storm which has been brewing ever since the war, and which now holds the entire world in its grasp. Shipping everywhere has felt its destructive fury. Surely, if the older foreign lines have found it difficult to continue operations, it is little wonder that some of our newly established American companies have also had a most trying time.

The shipping board has done everything legally possible to assist the American merchant marine during this period of stress. It has extended the notes of shipowners who have purchased shipping board ton-



nage and who now find difficulty in meeting their obligations to the government. It has been as liberal as the law permits in administering the construction loan fund. It has devoted much time and energy to straightening out the affairs of our most important line in the North Atlantic, and has been of material assistance to other lines that have suffered from economic conditions entirely beyond their control.

The board has sought to stimulate patronage for American ships, and to eliminate unfair competition. In this connection it is furnishing congress with the draft of a bill which, if passed—and there are excellent prospects of its passage—will put an end to so-called “voyages to nowhere” and other encroachments on our protected coastwise trade. It has carried on negotiations—not always successfully, I regret to say—with the federal farm board, in an effort to secure for American ships a fair share of the carriage of wheat and cotton disposed of to foreign governments. It tried to persuade congress to make the provisions of the act establishing the reconstruction finance corporation apply to the merchant marine. And it would, in my opinion, if it could do so under the law, declare a reasonable moratorium on debts owed to the government by lines which find themselves victims of the depression.

#### Welfare of Merchant Marine

I mention these things merely to show you that the shipping board, during these difficult times, is doing its best to promote your interests in every legitimate way. Only a few years ago the board owned almost the entire American merchant marine. Private interests represented in this room now own practically three-fifths of it. In a few years more the whole fleet will be in private hands.

For this reason, as much as any other, these national conferences are yours, rather than the shipping board's. The board sponsors them, but you carry on the deliberations and make known your conclusions. We do not take it upon ourselves to dictate what you shall do. Nor do we bind ourselves to adopt your views. Because of the many important matters on the program, it will be just as well to have this point understood before you begin your deliberations. You may count upon us to co-operate with you in every way.

#### Returns from Mail Contracts

Eugene R. White, director of the division of international postal service of the post office department explained to the conference how the United States is achieving independence on the sea and thus is saving “millions and millions” of dollars



**H. B. Walker**  
*President, Am. Steamship Owners Assoc.*

annually in ocean freight rates, because competition offered by the American merchant marine keeps down freight rates.

He said that the American merchant marine will be self supporting only when the American people learn to give their business to American ships and when the costs of building and operating ships under the American flag are lowered. He told the conference that the post office department will welcome a congressional investigation of its administration of ocean mail contracts.

Representative Ewin L. Davis of Tennessee, chairman of the committee on merchant marine, radio and fisheries of the house outlined six legislative proposals he said that he intends to present to congress to further a “100 per cent American merchant marine.” One of them



**H. G. Smith**  
*President, Council of American Shipbuilders*

would forbid the “trips to nowhere”, made by foreign vessels from American ports. Another, he stated, would extend the 24 hour preference to American ships carrying mail.

Representative Davis said, “We’re infinitely more generous to alien flag ships in giving them mail than they are to us. Since we do not receive reciprocal treatment, I do not see why we should favor them on mail contracts.” He said that he will also reintroduce his bill withholding federal aid from lines having foreign identities and will submit legislation to prevent foreign ships operating in intercoastal trade.

#### Faith in Future Progress

Senator White made a brief speech in which he voiced his belief in the future of the American merchant marine. “I have abiding faith,” he said, “that we are to march on to further efforts and greater achievements in behalf of American ships.”

Others who spoke included; H. B. Walker, president of the American Steamship Owners association; E. F. Luckenbach, president of the Luckenbach Steamship Co.; Col. A. F. Barber, of the United States chamber of commerce; F. W. Orr, of the Connecticut chamber of commerce; Arthur M. Tode of the Propeller club of the United States; and Malcolm Stewart, of the Middle West Foreign Trade committee and many others.

J. Howland Gardner, president of the Society of Naval Architects and Marine Engineers presented a paper on *The Naval Architect and Marine Engineer*.

Mr. H. B. Walker opposed the continuance of the operation by the government of army and navy transports and the Panama Railroad Steamship line as being a handicap to the merchant marine. These government shipping activities, he said, deprive private American lines of \$2,500,000 in annual revenue. He added that the routes over which these services operate are adequately served by private American ships. (See page 12.)

#### Shipping and Railroads Compared

Mr. Luckenbach, in presenting the operators’ viewpoint on the coastwise and intercoastal situation, advocated federal regulation of intercoastal shipping “so that we can pay our debts to the shipping board.” Citing the effectiveness of regulation by the interstate commerce commission in joint rates with railroads along the gulf coast, he said: “If this is one of the horrors of government control I pray that we get it quickly.”

He declared that all of the facilities set up by the intercoastal trade to deal with rate wars have collapsed and that the operators because of their varying basic structures, find it impossible to compose their difficulties.



"In this respect," he said, "the intercoastal trade is passing through a period not unlike that which characterized the railroads many years ago when there was competition of the most violent character, when railroads were merchandising their own products and when the struggle for advantages at times led to personal clashes and physical violence. I am happy to say that so far we have been spared the last."

Colonel Barber said the "enormous improvement in service rendered by American ships is the best argument for building patronage."

#### Wider Information On Shipping

Mr. Orr advocated that the public be better informed regarding the shipping business. The people do not know as much about ships as they know about railroads or aviation, he said, and consequently the industry does not receive the full benefit of its potential business.

Mr. Tode declared that "the greatest factor preventing patronage of American ships is the Volstead act" and he urged that the public be advised that liquor is obtainable openly on all American lines, with one exception, outside the 12-mile limit. "You know," he said, "that with the exception of one line, the merchant marine is wet, and on that line there are bootleggers in the foreign staff. Travelers do not know that they can get liquor on American ships."

Mr. Stewart asserted that the surest way of maintaining an adequate and efficient American merchant marine is to support it to the fullest possible extent. His organization, he said, is constantly reminding business interests that out of every dollar spent with American ships, 90 cents goes to provide employment for American labor.

While "we know that the operators of American vessels are in every way competent, we still insist there is a patriotic appeal over and above all this," he said.

Frank V. Smith, of the federal and marine department, General Electric Co., told the conference "there is no alternative but to build and operate our own ships" and that the manufacturers owe it to the nation and to themselves to give our merchant marine support.

"We have been at the crossroads of indecision long enough," he said, "we have tried to help the world in order that we might regain its markets and we have broken ourselves in the attempt and ruined our markets for the world."

Franklin D. Mooney, president, Atlantic Gulf and West Indies Steamship lines, declared that remedial legislation must be promptly enacted to prevent foreign lines from depriving American ships of trade between the United States and the West In-



**Franklin D. Mooney**  
*President, Agwi Steamship Lines*

dies and from conducting "voyages to nowhere" from United States ports.

Edward P. Farley of the American Hawaiian Steamship Co., formerly chairman of the shipping board, advocated government regulation of rates and practices to remedy conditions in the intercoastal trade.

H. Gerrish Smith, president, National Council of American Shipbuilders, asserted that unless an early start is made in replacing ships, our fleet will be 60 per cent obsolete in eight years. Mr. Smith presented statistics showing that the United States has built only 4 per cent of the world total of merchant vessel tonnage in the last 10 years and that The Netherlands, Norway, Italy and France each have built more tonnage than this country.

The conference also heard a series



**J. Howland Gardner**  
*President, Society of Naval Architects & M. E.*

of reports of subcommittees of the national standing committee on the merchant marine.

Frank V. Smith asserted that because of the dependence of this country upon the world for widely scattered raw products and for the distribution of raw and manufactured goods which we produce, it is of paramount importance to industry that its transportation channels be protected.

Mr. Smith gave five reasons why manufacturers must stand together for an American merchant marine of such size. The first, he said, is self-preservation. He stated in this connection that the cutting of our transportation links which bring rubber to our shores would result, almost over night, in the shutting down of large industrial centers and the stranding of thousands of workers in sections where no other work is available. Other items of import, if cut off, would be equally disastrous, he asserted.

A second reason is for extension of trade. "There is one way in which we can demand our rightful share of transportation in the deep-sea lanes of the world and that is by using the prerogative of the buyer—the right to route our shipments to our own shores on our own ships. As the United States is today one of the largest trading nations on earth, the question if it is also to become a sea power remains entirely in the hands of our manufacturers who control the shipments of raw products to our shores," he asserted.

#### Will Become Major Industry

A third reason, he said, concerns the relationship between manufacturers and shipbuilders.

"Shipbuilding will become one of the major industries of our country once we demand our rightful place on the seas," he declared, and would benefit almost every state through products required in construction."

The fourth reason is the benefits that come through operation, Mr. Smith stated. Under normal conditions the shipping industry employs 107,500 men, who spend money which aids capital turnover.

The speaker declared that ship operation and maintenance are considered a \$1,000,000,000 industry and that about \$300,000,000 is spent yearly for operation, maintenance, stevedoring, and dock equipment, \$125,000,000 for repairs, \$450,000,000 for food, fuel, wages, pilotage and miscellaneous items; and \$125,000,000 for replacing obsolete tonnage.

The fifth reason why manufacturers should assist the merchant marine, according to the speaker, is that money expended either for freight or passenger service is again expended in our own community, recirculated, and helps to provide new



ships, furnishings and food supplies.

Mr. Mooney declared that American ships are faced with being driven from the United States, West Indies and South American trades by unfair competition of foreign ships.

He said that a British company in 1929 started a bi-weekly service from New York to Havana and return "during the cream of the season," notwithstanding protests of American lines which have been operating large and fast ships on this run continuously for many years. At the beginning of this season, there were 108 cruises to Havana and the West Indies announced by foreign companies, he said.

#### American Lines Lose Business

The ships making these cruises, in most instances, do not fly the flag of the countries served, and their earnings are not dispersed in the United States, the speaker stated. As a result of this competition United States ships are unable to make a profit and will be compelled to withdraw if these conditions continue, he declared.

Mr. Mooney asserted that foreign ships, encouraged by the inability of the United States to prevent these operations, have begun "voyages to nowhere," or sailings from American ports and returning to the same ports without terminating their voyages at a foreign port. He declared that while this may not be technically in violation of our coastwise laws, "it is clearly a violation of their spirit."

Mr. Farley told the conference that the situation in the intercoastal trade demonstrates that "no carrier, however efficient, can earn a fair return on his investment until unfair practices have been eliminated and reasonable rates established with some degree of permanency. He pointed out that the only large industries not suffering from rate or price cutting today are those regulated—railroads, public utilities, pipe lines, telegraph, telephone, etc.

Mr. Farley declared that the shipping board is responsible for the supervision of millions of dollars appropriated by congress to build up the merchant marine but that it lacks the power to protect this investment from unfair competition "which is tearing it down at a much faster rate than it is being built up."

#### Poor Outlook for Shipbuilding

H. G. Smith informed the conference that because of the impetus given by the merchant marine act of 1928, shipbuilding has been quite active during the past two years and will continue so during the greater part of 1932, but that the outlook for 1933 is "very poor." He said there is no assurance that 1934 will be better.

At the beginning of this year, he

asserted, there were 19 seagoing merchant ships under construction, 15 of which, and possibly 17, will be completed by the end of the year and the remainder by the spring of 1933. Only two merchant vessels under existing mail contracts are definitely required for delivery in 1933, he added.

Mr. Smith said that due to the depression, building of seagoing pleasure craft is almost inactive and that the outlook for the immediate future is poor. Due to the continued practice of constructing a large percentage of naval vessels in government yards, little can be expected from this source and the shipbuilders must therefore look chiefly to merchant ship work for the immediate future.

"The lean years which appear to be immediately ahead," the speaker said, "will unfortunately result in a reduction of the engineering and mechanical forces which have been built up during the past three years to handle the shipbuilding program now nearing completion. This is a matter of serious import to the shipbuilders and unless the replacement of our obsolete tonnage begins at an early date, much of this talent will be lost to the industry."

The appointment of a committee to represent the industry and to prepare a program that will safeguard American shipping was proposed by Clinton L. Bardo, president of the New York Shipbuilding Co. He appealed for the concerted action of the industry to remedy the shipping situation.

### Hold Safety Conference

The third annual Greater New York Safety conference under the auspices of the Metropolitan chapter of the American Society of Safety Engineers, the engineering section of the National Safety council and 47 co-operating organizations is being held in New York on Feb. 24 and 25, while this issue of MARINE REVIEW is going to press. The subjects covered by the various sessions include *The Eye—Its Relation to Safety*, *Stevedoring*, *First Aid*, *Curing the Accident Habit*, *Commercial Vehicle*, *Conference of Inspectors*, *Health and Safety*, *Plant Housekeeping*, *Accident Facts*, *Public Utilities* and *Industry's Interest in Safety Outside the Plant*. The stevedoring program is being sponsored by the marine section of the National Safety council under the direction of Capt. P. B. Blanchard, President Turner & Blanchard Inc., New York.

Goodrich Cutless bearing is used on the steamer E. E. LOOMIS owned by the Great Lakes Transit Corp., Buffalo. The ship is equipped with a bearing for a 12 7/8-inch shaft.

## Board Reassigns Service Of the Yankee Line

The shipping board on Feb. 3 authorized the use of the trade name "Yankee Line" by the American Hampton Roads line for that portion of its services covering the ports of Philadelphia, Boston and Portland, Me., to Hamburg and Bremen.

The Yankee line was formerly operated by Rogers & Webb, Boston, who have requested the board to be relieved of the management of the line, due to the recent death of Charles F. Webb. This line operated four vessels, the NATIRAR, SEATTLE SPIRIT, WEST HARCUIVAR and WEST POOL and were operated between the ports of Philadelphia, Boston, Norfolk and Baltimore and Hamburg and Bremen, Germany. These vessels will be withdrawn from service for the present.

The shipping board has reassigned the territory served by the Yankee line. The ports of Portland, Boston and Philadelphia will hereafter be served by the American Hampton Roads line and the ports of Baltimore and Hampton Roads to the Hamburg, Bremen range, will be served by the Baltimore Mail line.

The American Hampton Roads line now consists of the CAPULIN, CITY OF FLINT, LEHIGH and QUAKER CITY, maintaining a service between Baltimore, Norfolk, Newport News, Philadelphia and Boston and London, Hull, Leith, Dundee and Southampton. The extended territory of the American Hampton Roads line will provide service between Philadelphia, Boston and Portland, Me., and Hamburg and Bremen, Germany, being continued on these runs as the Yankee line.

The Baltimore Mail line now operates a regular service between the ports of Baltimore and Hampton Roads and Hamburg with the CITY OF BALTIMORE, CITY OF NORFOLK, CITY OF HAMBURG, CITY OF HAVRE and the CITY OF NEWPORT NEWS.

### Sailor's Fund Drive

Total receipts in the sailors' fund drive for the relief of unemployed and destitute seamen in New York, as of Feb. 1 amounted to \$81,268, leaving a balance of \$18,732 still to be raised. Large contributions have been made by officers and crews of ships of various steamship lines, steamship companies, and admiralty firms. Welfare agencies co-operating in this relief work who have equipped emergency dormitories and are supplying meals are the Seamen's Church Institute of New York; Seamen's House of the New York Y. M. C. A., Danish-American Seamen's Mission, Brooklyn Bethelship Y. M. C. A., Swedish-Lutheran Immigrant Home, German Seamen's Home of Hoboken and the Carlton branch, Y. M. C. A.



# Modern Rudder Design, An Analysis

## Maneuvering and Holding Course

By John Tutin\*

THE essential features of a rudder are (a) to maneuver, (b) to hold course. These two conditions are in some respects opposed to each other, because in general, a vessel which has a high degree of directional stability is necessarily not easily deflected, and is less easy to maneuver than a vessel with low directional stability.

Thus the designer is faced with a question of compromise, and the logical solution is to design the hull with the greatest possible degree of directional stability consistent with reasonable hull form, and thereafter to overcome any sluggishness in maneuvering by increasing rudder area. This is a cardinal principle to which insufficient attention has been paid in the past, but on the other hand the remarkable propulsive and maneuvering performance of many modern ships are largely due to its observance.

When a normal ship is deflected from her course by a wave or wind, there is no internal restoring force tending to return the vessel to her original heading, and consequently no such vessel can be directionally stable in scientific sense, unless fitted with a directional gyro as in the case of a torpedo.

It is common practice to attempt to assess maneuverability by making a turning circle at full speed with the helm hard over, but unfortunately this is a maneuver which the vessel will probably never repeat in service.

### Practical Maneuvering Tests

In the interests of the art and science of navigation, it would be a distinct advantage if more practical maneuvering tests were occasionally applied to vessels, as for example:

1. The vessel going full speed ahead; engines stopped and helm hard over. Time to turn through specified angle measured.

2. Vessel going full speed ahead; engines ordered full speed astern, and helm put hard over simultaneously. Time to reach the maximum angle of deviation from original course measured.

\*An abstract of paper on *Modern Rudder Design*, by John Tutin, D. Sc., A. M. I. N. A., naval architect, presented at a meeting of the Honorable Company of Master Mariners, Feb. 10, 1932, at the Chamber of Shipping, London.

---

IN view of the three articles on rudder efficiency in modern design, which have appeared in recent issues of *Marine Review*, this abstract of a paper on the general subject of modern rudder design by a British authority is of unusual interest and value. A complete understanding of the problem will emphasize the importance of correct design for best results. No longer should the question of the rudder be dismissed with the simple specifications of the usual plate rudder, in the main similar to that used on some other ship. Advantage should now be taken of the advance in the art, so clearly indicated in these articles.

Editor's Note.

---

3. Time taken to turn short round with standardized orders for engines and helm for the purpose of the test.

Data of this character would be of considerable assistance to rudder designers, by giving them accurate impressions of the practical effects of variations in rudder characteristics on maneuverability, and it would also be of considerable guidance to those engaged in the handling of admiralty cases involving questions of steering.

Development of modern types of rudder owes a great deal to hydrodynamic research in experiment tanks, to aerodynamic research in wind tunnels, and to mathematical research and analysis. Such research has definitely established what previously was merely suspected, namely the overwhelming importance of the streamline rudder.

A streamline or aerofoil section increases the ship turning moment per unit rudder surface, by increasing the pressures developed on the surface at a given angle of incidence, just as an aeroplane wing with a thick section develops a big-

ger "lift" than it would if it were a flat plate. In addition it helps to preserve directional stability by stabilizing the flow in such a way as to produce an instantaneous effect from quite small changes of helm.

Another feature of postwar development has been the rapid extension of the application of balanced rudders to single screw ships.

With the advent of screw propulsion, it was necessary to cut an aperture in the deadwood immediately ahead of the rudder in order to house the propeller. The effect of this aperture was to eliminate any possibility of the deadwood augmenting the action of the rudder, and accordingly at this stage in the evolution of the modern ship the unbalanced rudder should logically have been displaced by a balanced rudder.

### Increasing Propulsive Effect

Some years before the war a certain type of balanced rudder was in fact fitted to a large number of single screw ships, and in particular to the well known "turret" ships. After this lapse of time it may perhaps be permitted to say, without any reflection on those responsible for the introduction of this type of balanced rudder, that it was by no means an unqualified success, due as we now know, to inadequate methods of support.

It is agreed that the primary function of a rudder is to steer the ship, but that is no reason why the rudder should not be used to assist propulsion if this can be done without prejudice to the steering characteristics. It is in some respects a matter of coincidence that the types of rudder that give the most efficient steering in the case of multiple screw and single screw ships, are also the most efficient from the propulsive point of view. Thus in the case of a multiple screw vessel an unbalanced streamline rudder fitted snugly against the deadwood is equivalent in effect to an increase in the displacement length of the ship, permitting not only finer endings to the water lines in the afterbody, but also exerting an important influence on the wave resistance of the hull.

In the case of a single screw ship a balanced streamline rudder may be designed in such a way as to derive a reaction or auxiliary thrust from the rotation in the propeller



slip stream. With a right-handed propeller the flow impinges on the port side of the rudder above the axis and on the starboard side below. Thus there are in a sense two "head winds" inclined respectively to port and starboard, and consequently the upper and lower halves of the rudder can be inclined respectively to port and starboard in such a way as to derive a forward propulsive thrust.

#### Reaction Type of Rudder

The reaction type of rudder is, in fact, a scientific application to the modern ship of the identical principles which were known and applied by the earliest users of sail. The application can be simply and convincingly demonstrated by means of an electric fan.

Under given conditions there is a range of helm and a degree of yaw which might be considered satisfactory from a navigation point of view, but naval architects are coming to the conclusion that means must be introduced whereby these accepted standards must if possible be still further reduced, owing to the present intensive pursuit of pro-

pulsive efficiency. In short we must design rudders which are more powerful and instantaneous in their action, and we must design hulls with greater directional stability.

Improved types of rudder must be associated with more sensitive control of the steering gear, and there is also a big field for the introduction of improved types of helm indicator. What is needed is a helm indicator which will record actual helm angles over an extended scale up to say 10 degrees on either side, and thereafter in intervals of  $2\frac{1}{2}$  degrees or 5 degrees as desired. Such an instrument will undoubtedly be of great assistance to the helmsman in keeping helm angles to the absolute minimum, and will make for more intelligent and more sensitive work at the wheel.

### British Build New Type Of Oil Tanker

British naval designers have constructed a small oil carrier, which experts believe may revolutionize tanker construction. The vessel was built by

the Rowhedge Iron Works for the National Benzole Co. and named BEN SADLER. The peculiarity of her construction is that her tanks have been built separately from the hull and the plates welded together instead of riveted.

The hull also has been welded, in the manner of the new German hulls, and it is estimated that by this process the designers have saved nearly 30 per cent in weight.

The BEN SADLER is designed to carry only 300 tons, but if the expectations of her designers are realized it is likely that in the near future large ocean-going tankers will be built along the same construction lines.

Charles J. Pannill, executive vice president of the Radiomarine Corporation of America, announced the signing of new rental agreements covering all of the ships of the Grace line and Panama Mail line. Under the agreements these vessels will be equipped with short and long wave transmitting and receiving equipment to keep them in direct touch with the Radiomarine Corporation's stations throughout their voyages.

## Fixing Panama Canal Tolls and Measurement

THE committee of J. T. Lypes, chairman, J. C. Rohlf and H. B. Walker, appointed at a meeting of the standing committee on merchant marine held in Washington, April 24, to consider the question of Panama canal tolls and measurement, submitted the following report:

The Panama canal act, as amended, provides for a system of admeasuring vessels transiting the Panama canal which has been in use since its opening. This act, as amended, gives the President of the United States, subject to certain limitations, power to fix the tolls to be charged vessels transiting the canal. Tolls may be based upon "gross or net registered tonnage, displacement tonnage, or otherwise," but if not based upon net or registered tonnage, tolls are not to exceed the equivalent of \$1.25 nor be less than the equivalent of 75 cents per net registered ton. The words "net registered ton" have been interpreted by the attorney general as meaning the net registered tonnage of ships as determined by the rules for the admeasurement of vessels as prescribed by the department of commerce. Because of this ruling there are two systems of ad-

measurement in effect at the canal at the present time—namely, the Panama canal rules of admeasurement and the rules of admeasurement as prescribed by the department of commerce.

For several years attempts have been made by the canal authorities to have congress prescribe the Panama canal rules as the sole system in effect for the admeasurement of vessels at the canal. In the bills which have been proposed, the limitations as to tolls

now in effect are taken away and in substitution it is proposed that for vessels laden the maximum rate shall be \$1.00 and the minimum rate 75 cents, and for vessels in ballast the rate shall be 60 cents per net ton, determined in accordance with the Panama canal rules. It is understood that the proponents of the single system of admeasurement believe if it were adopted that the accounting methods at the canal would be very greatly simplified.

The committee finds on examination that the tolls paid by American steamship companies under the rate proposed would be materially increased. In some instances, of course, the tolls paid by some companies would be decreased, but the result, taken as a whole, would be an added charge upon the industry.

The committee therefore recommends that the standing committee go on record as being opposed to any plan doing away with the dual system of admeasurement at the Panama canal unless that proposed as a substitute provides such rates per ton for vessels transiting the canal that the tolls now paid by any one company will not be increased; in fact, the tolls paid at present by commercial vessels, if based upon that part of the cost of the canal which can properly be assessed to commercial interests, furnish a handsome return to the government.

Report of the subcommittee on Panama Canal Tolls and Measurement submitted to the National Standing Committee of the Merchant Marine, presented to and adopted by the Fifth National Conference on the Merchant Marine, meeting at Washington, Jan. 27-28, 1932.

THE *Panama Canal Record*, official publication of the Panama canal, for Jan. 6, 1932 tabulates the number of commercial transits and the amount of tolls collected for the calendar year 1931 with comparative totals for the calendar years 1930 and 1929.

Month	Transits	Tolls
January .....	476	\$2,108,140.42
February .....	431	1,915,902.78
March .....	439	1,964,434.22
April .....	453	2,014,349.13
May .....	428	1,923,452.18
June .....	400	1,821,408.73
July .....	406	1,848,638.45
August .....	390	1,770,202.71
September .....	396	1,820,735.75
October .....	390	1,823,650.74
November .....	376	1,762,036.19
December .....	387	1,757,869.54
<b>Total, calendar</b>		
<b>year, 1931 .....</b>	<b>4,972</b>	<b>\$22,530,820.84</b>
<b>Total, calendar</b>		
<b>year, 1930 .....</b>	<b>5,885</b>	<b>\$26,146,024.96</b>
<b>Total, calendar</b>		
<b>year, 1929 .....</b>	<b>6,430</b>	<b>\$27,592,715.84</b>



# North German Lloyd Founded Seventy-five Years Ago

IN THE three-quarters of a century since the establishment of the North German Lloyd on Feb. 20, 1857, 12,263,113 passengers have been carried. The present-day BREMEN and EUROPA are the fastest liners afloat and hold the blue ribbon of the Atlantic. The first BREMEN was a little craft 334 feet long and 42 feet broad; and with the NEW YORK, set an average westward crossing of 12 days and 10 hours and an average eastward crossing of 12 days and 5 hours.

Fifty-one years ago, June 26, 1881, the North German Lloyd S. S. ELBE, a steamer 420 feet long and of 4510 gross register tons, sailed from Bremen for New York, beginning German transatlantic express service. The crossing was made in 8½ days, as compared with the 14 days required by other Lloyd ships. The ELBE developed 18 knots and her fastest trip was made in 1882, from Southampton to New York, in 8 days and 1 hour. In 1883 the steamers WERRA and FULDA were built to operate together with the ELBE in the express service. In 1886 five additional ships were placed in operation to maintain a bi-weekly transatlantic express service. The five new ships, similar in type to the ELBE, but each incorporating successive improvements, were named the EIDER, EMS, ALLER, TRAVE and SAALE.

At its twenty-fifth anniversary, in

1882, the company commanded the fourth largest shipping fleet in the world, 98 ships with a registered tonnage of 100,000. For the American service, from 1887 to 1890, four more express steamers of about 7000 gross register tons each were built: the LAHN, KAISER WILHELM II, SPREE, and HAVEL.

Possession of the mythical "blue ribbon" became the cherished desire of every steamship company. With this objective in mind the KAISER WILHELM DER GROSSE was launched on March 4, 1897. Her gross tonnage was 14,000; her displacement 21,000; and in September on her maiden voyage at a speed of 22 knots, she made a record day's run of 580 miles; the first time in history that such swiftness had been attained. At once a great rush of passengers crowded to cross the ocean in this holder of the record.

Then followed in 1901 the KRONPRINZ WILHELM, which set a new record for speed. In 1902, the new KAISER WILHELM II surpassing previous accomplishments attained a speed of 23.57 knots on her trip from New York to the English channel; and in 1907 the KRONPRINZESSIN CECILIE with a speed of 23.58 knots. A weekly crossing between Bremen and New York was thus provided with two ships always "en route," while one in Bremerhaven, and one in New York were loading and un-

loading. In addition, during the years 1902-1905, the Lloyd increased its fleet by the introduction of the new 10,000 ton steamers PRINZ EITEL FRIEDRICH and PRINZ LUDWIG, to which were joined in 1909, a somewhat larger type of ship, such as the BULOW and YORCK.

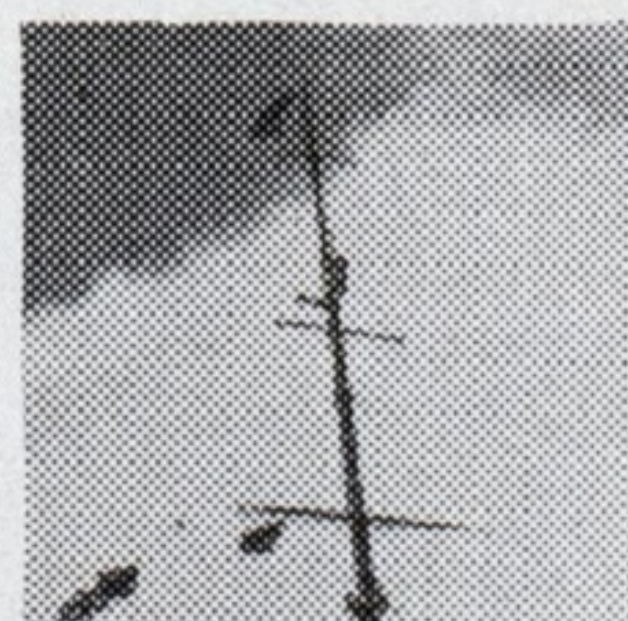
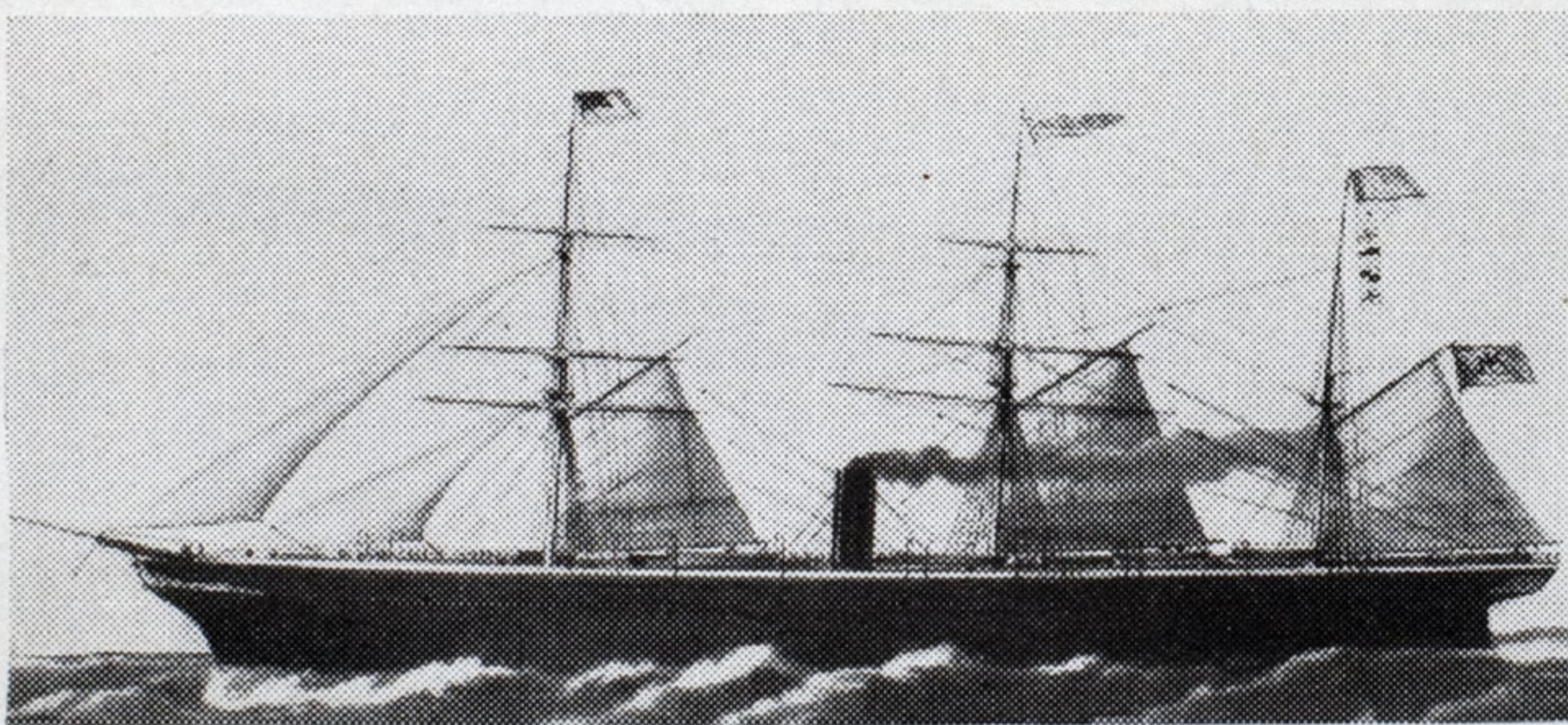
In 1914 the company's tonnage reached 982,000 gross register tons, which was reduced to little more than 57,000 tons as a result of the war. In 1921, three new steamers were added; in 1922 came the first Lloyd steamer to re-enter transatlantic service, the SEYDLITZ; in 1923 the fleet was increased by eight ships, including freight steamers; and in 1925 came the BERLIN which now heads the Lloyd cabin liners.

The days of steerage were over. It is true that first class persisted in ever increasing luxuries and refinements; but cabin class was winning increasing favor, and an entirely new class—tourist—came very suddenly into being and had to be considered. Year by year it became more and more popular; and its consideration played no small part in the reconstruction program of the company. Until 1929, the COLUMBUS, of over 32,000 tons, led the Lloyd fleet.

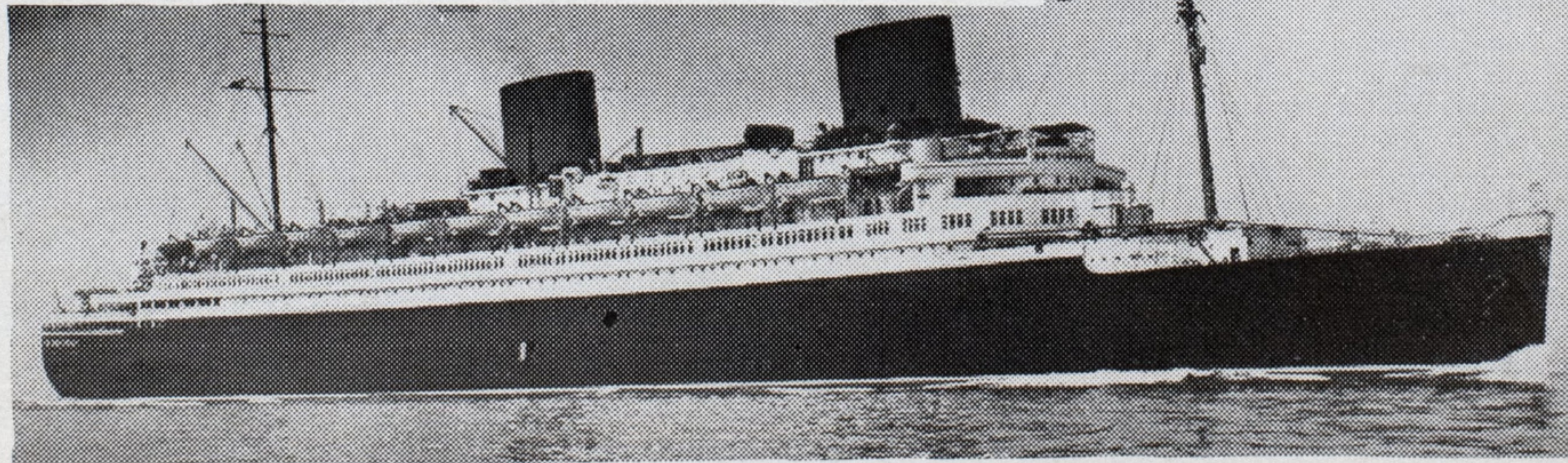
On July 22, 1929, the BREMEN entered New York harbor after a record crossing of 4 days, 17 hours, and 42 minutes, and thereby won back the blue ribbon for the North German Lloyd. Overnight the ship became popular as a symbol for speed wherein gaiety and luxury added prestige. On her eastward voyage she again broke the record; and was hailed as the queen of the seas.

In March, 1930, the EUROPA entered New York harbor bettering the BREMEN's record time by 12 minutes. The westward record is still held by the BREMEN in the time of 4 days, 14 hours and 30 minutes. Here once again, as at the turn of the century, the North German Lloyd possessed the world's two fastest liners, and with the COLUMBUS, now maintains the fastest

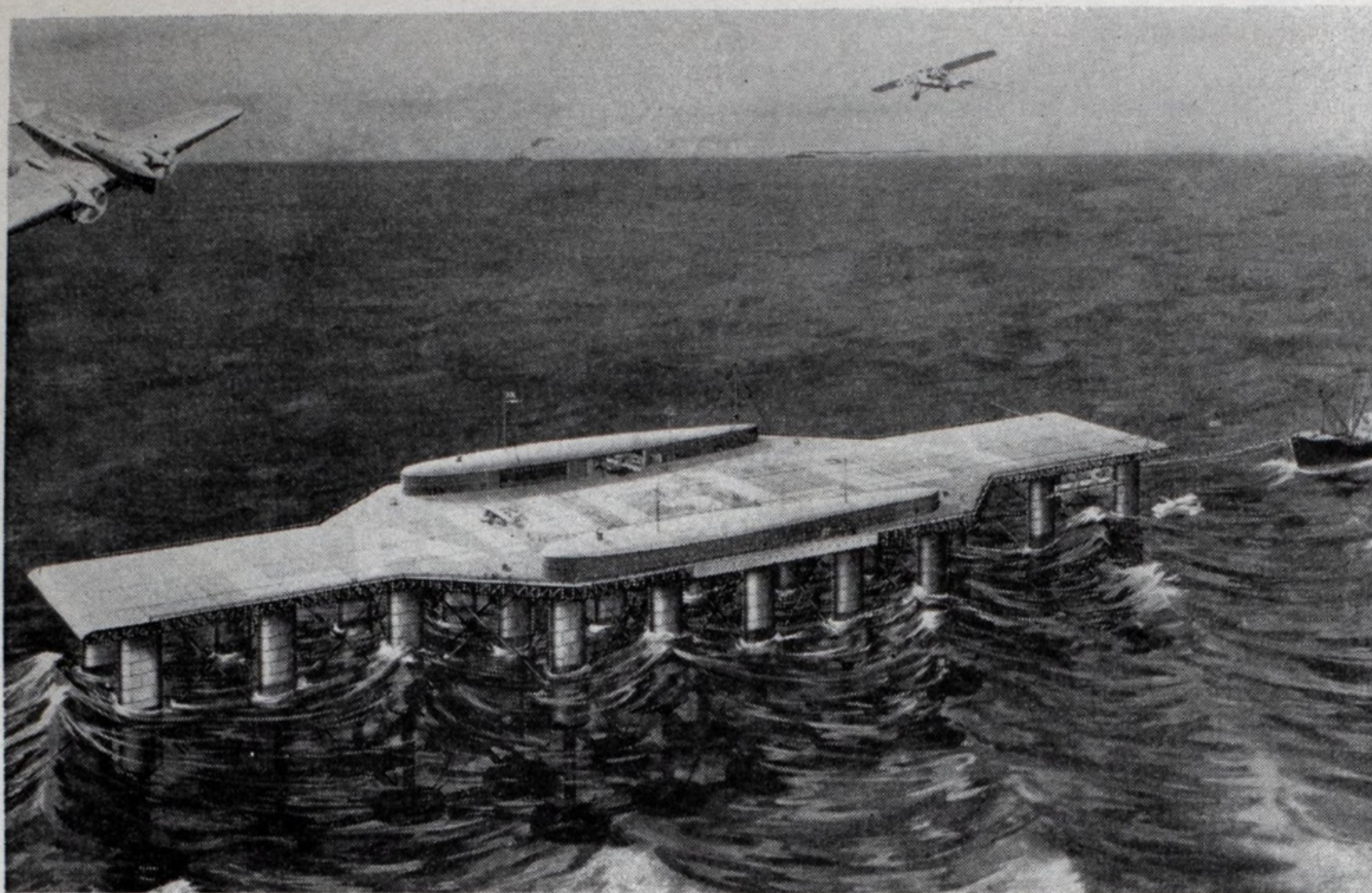
(Continued on Page 32)



*S. S. Bremen, first transatlantic steamer of North German Lloyd—1858, and S. S. Europa, sister-ship of S. S. Bremen—1932*







Artist's conception of seadrome in deep draft condition, anchored on ocean airway. Supply ship is shown at the extreme right

# Seadrome Project Presents Unique Design Features

BY A. H. ALLEN

Associate Editor, Steel

**S**EADROMES or mid-ocean landing fields for aircraft have been the subject of popular fancy and speculation as well as serious investigation since as early as 1915. Although no attempts have been made to erect one of these structures for practical usage, it now appears that after 17 years of development work, the first seadrome will make its appearance shortly.

Work is being carried on under the direction of Edwin R. Armstrong, consulting mechanical engineer specializing in aircraft, and president of the Armstrong Seadrome Corp., Wilmington, Del., who has been investigating seadrome possibilities and has designed 20 different types in the past 15 years. The final design evolved recently by Mr. Armstrong is shown in accompanying illustrations. Plans and specifications for the structure are complete, bids on material have been received and construction work is awaiting completion of financial arrangements. Mr. Armstrong states that he hopes to have work under way by summer of this year.

Over 17,000 tons of structural iron and steel, in addition to several thousand tons of iron ore for ballast will be required for the first of these seadromes, to be located about 350

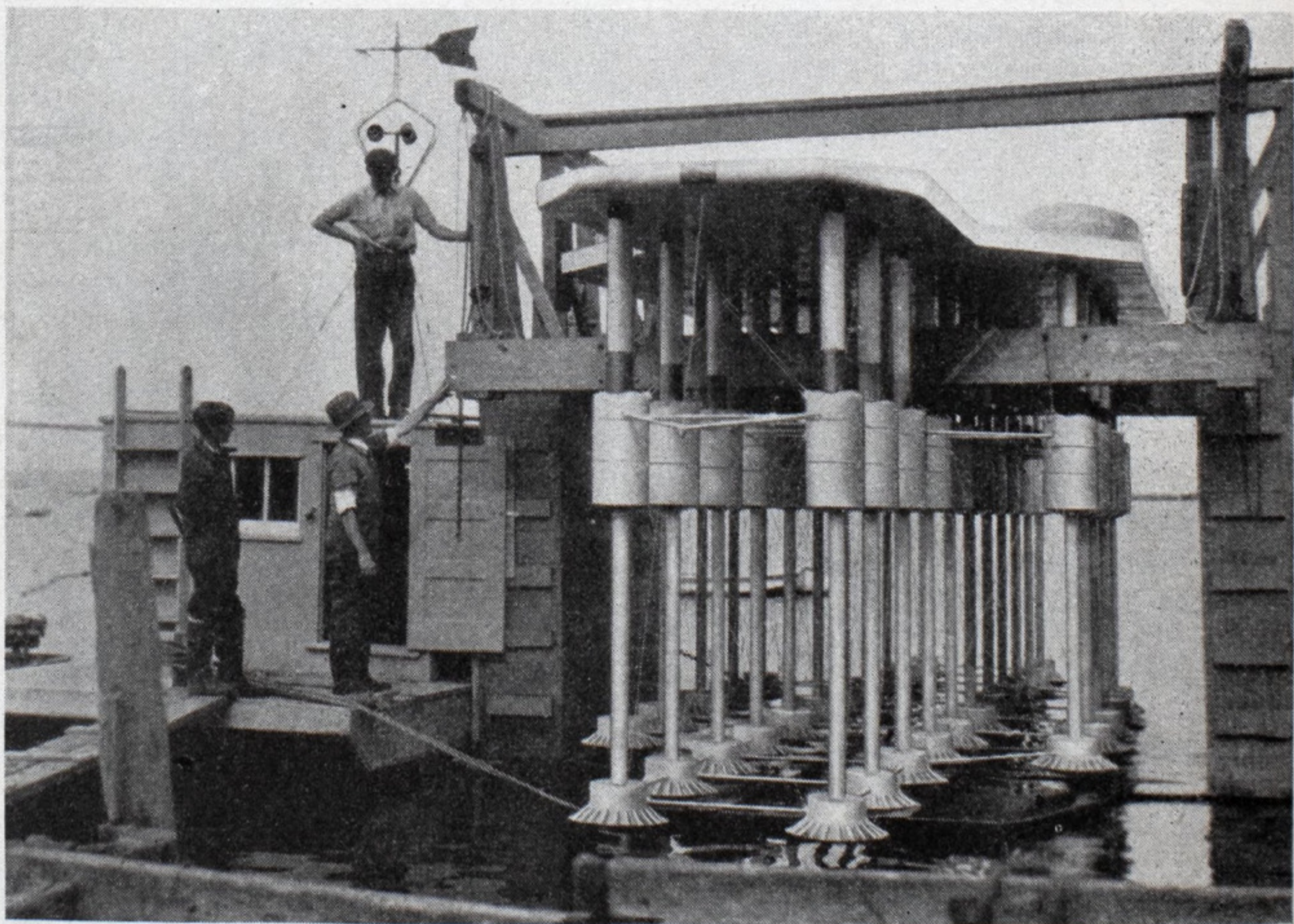
nautical miles from New York, on the New York-Bermuda steamship route, in 12,000 feet of water. If installation and operation prove successful, and exhaustive investigation by Mr. Armstrong seems to indicate

that they will, plans call for the installation of seven additional seadromes at 500-mile intervals on a southerly route to Europe.

The seadrome is a 6-acre landing deck mounted on a floating open-work structure, with the deck 70 feet above the water line and buoyancy tanks averaging 40 feet below water line. The deck and substructure are supported by 32 tubular columns so arranged and of such a shape that passing waves will pass through the assembly without being broken up. Buoyancy tanks, below the columns supporting the deck truss and floor system, are located so as to be in the relatively undisturbed water under the waves. Further down the columns ballast tanks give the whole structure adequate stability, the principle being to maintain a sufficient metacentric height in all conditions. These ballast tanks or chambers, containing iron ore, are 160 feet below the surface of the sea, and are extended in circular form, as shown in the illustrations, to act as damping disks to prevent oscillation. Displacement of the structure in service is 50,000 tons.

## Special Anchorage Devised

A 1500-ton reinforced concrete anchor, resting on the bed of the ocean, is connected to an anchorage buoy by a triple anchorage cable of six sections. Each of the three cables ranges in diameter from 2 3/4 to 3 3/4 inches. The entire cable is 17,900 feet long with a weight of 417 tons, and provides a safety factor of well over 5. Two 3 1/4-inch 500-foot cables connect the anchorage buoy to the seadrome, which lies down wind from the buoy. The buoy,



Seadrome model, 1/32 scale, 35 feet long and weighing 2 tons. This model was towed out into Chesapeake bay and tested to determine its performance in rough weather



shown in one of the illustrations, comprises three buoyancy tanks inter-connected in the shape of a triangle. As an additional precaution, a test cable made up of one strand of main anchorage cable is pendant from the seadrome and can be raised periodically for inspection to determine condition, corrosion, etc. Design of the anchorage and cable systems was worked out by John A. Roebling's Sons Co., Trenton, N. J.

The seadrome steel deck, design of which was drawn up by the Belmont Iron Works, Philadelphia, is 1100 feet long, 340 feet wide in the central zone and 180 feet wide at the ends. It is proposed to cover the surface with the interlocking type of structural steel flooring described in *STEEL*, Nov. 9, page 34. The 32 buoyancy tanks are connected to the deck by means of streamlined iron columns, the whole forming a deep truss by means of tubular struts and steel cable ties. Buoyancy tanks are arranged symmetrically in four rows, the outer rows being composed of five tanks each, 34 feet in diameter, and the central rows of 11 tanks each, 27 feet in diameter. All tanks are 38 feet deep, with longitudinal spacing averaging 100 feet.

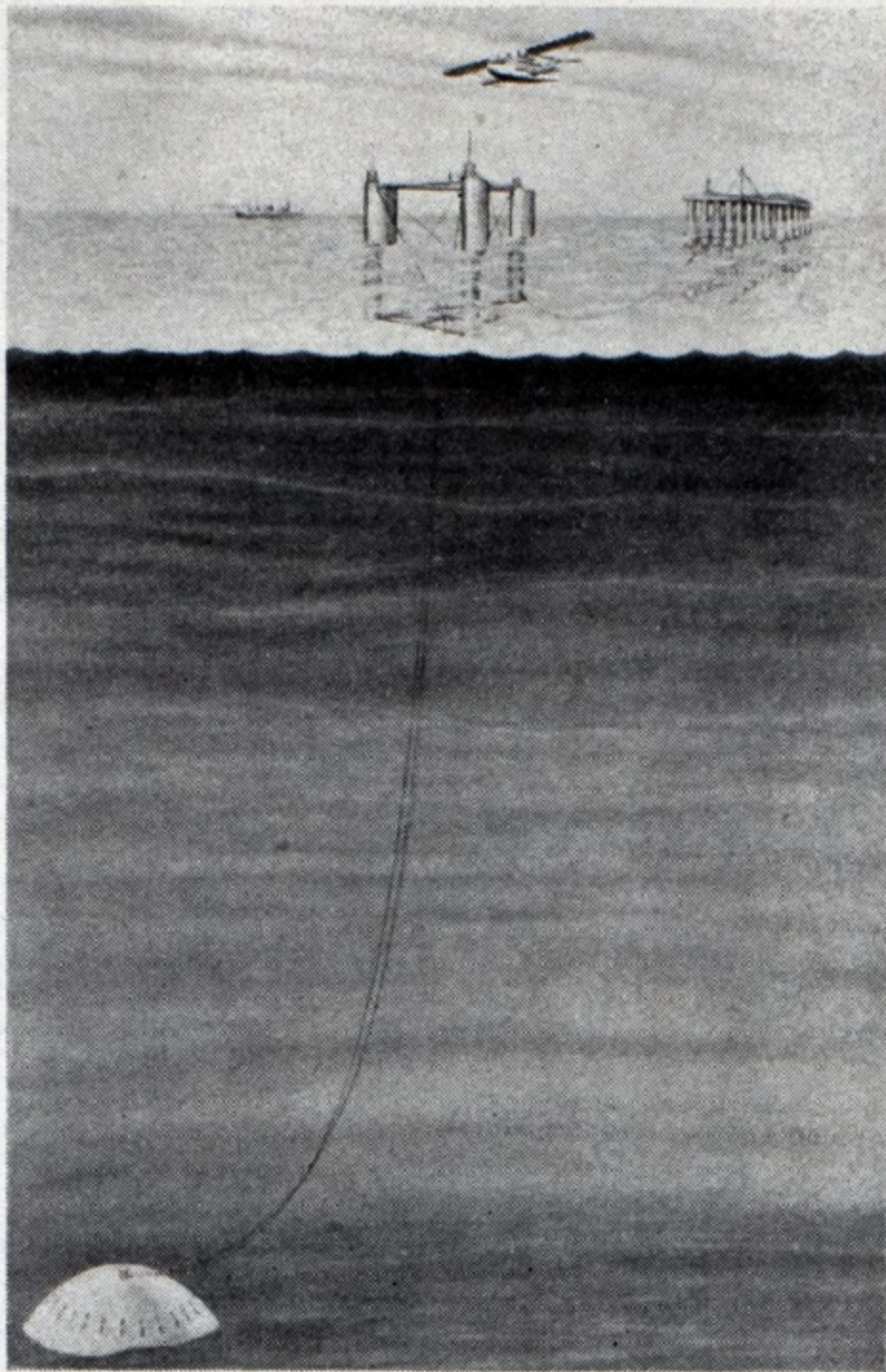
Below the buoyancy tanks the lower columns extend about 100 feet to support the ballast tanks which contain ore ballast sufficient in amount to bring the center of gravity of the structure as a whole about 10 feet below the center of buoyancy.

#### Telescoping Columns

The deep sea draft of the seadrome, on station duty, is 177 feet. Obviously, such a great draft precludes erection close to shore, so a special construction has been adopted to permit this operation in shallow water, with a draft of approximately 44 feet. Ballast tank columns are designed to telescope up inside the streamlined upper columns, connecting the buoyancy tanks with the deck; the ballast, ballast tanks and ballast tank columns under this condition being supported by the buoyancy of the ballast tanks.

Soft steel is the principal construction material, used with riveted joints, the single exception being the deck, where welding is to be employed. Special rivets are specified in all locations directly exposed to sea water, to minimize corrosion brought about by electrolytic action. The streamlined columns, connecting the deck with the buoyancy tanks, are made of iron, since investigation has shown that iron is highly resistant to salt water corrosion, as evidenced by the long life shown by numerous old iron sailing ships.

According to present plans worked out for assembly of the structure, fabrication of the deck trusses and the floor system will commence simultaneously with the construction



*Anchorage system showing seadrome connected to anchorage buoy which in turn is connected by triple cable to the 1500-ton reinforced concrete anchor on the ocean floor*

of the buoyancy units. Buoyancy tanks, together with connecting columns and struts, will be fabricated by the Sun Shipbuilding Co., Chester, Pa., and companies associated with it, producing among them four units every 30 days. Belmont Iron Works will construct the necessary deck system to go with one section of two tanks, every 15 days.

The first four tanks will be assembled in skeleton form under the Philadelphia Navy Yard crane to give an erection platform on which to locate the erection derricks necessary

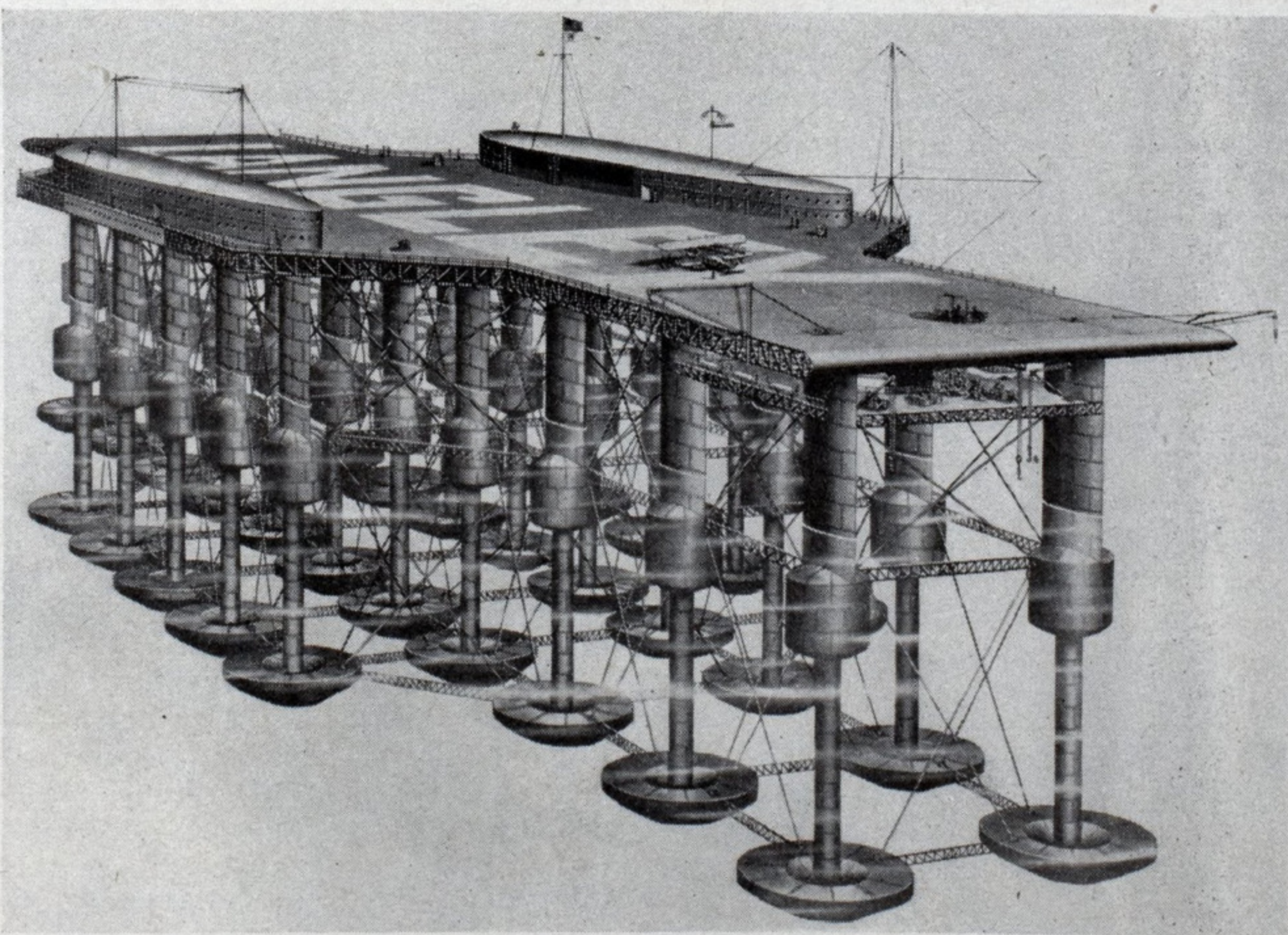
to complete the balance of the structure at the assembly point in Delaware bay, about 10 miles west of Cape May, N. J. The first unit will be towed to this site and anchored, while deck structural material and additional buoyancy units will be barged and towed to the erection site, completing assembly of the structure in shallow draft condition. About nine months time will be required for complete erection in shallow draft, while an additional three months will be required to tow the structure to its final location and anchor it there.

The seadrome will provide service hangars, repair shops, weather bureau, radio equipment and direction finders, beacon lights and modern hotel accommodations. A personnel of about 125 resident employes will be maintained with facilities for a floating population of from 300 to 500.

#### Expert Consultants

A number of organizations have co-operated with the Armstrong Seadrome Corp. in preparing details of design, construction and operation, including Henry J. Gielow, Inc., New York; Black & Bigelow, New York; John A. Roebling's Sons Co.; Belmont Iron Works; Sun Shipbuilding Corp.; General Electric Co., Schenectady, N. Y.; Lidgerwood Mfg. Co., New York; Baldt Anchor & Chain Corp., Chester, Pa.; the DuPont Co., Wilmington, Del.; Sperry Gyroscope Co., New York; bureau of standards and navy department, Washington; Sikorsky Aviation Corp., Bridgeport, Conn.; Merritt-Chapman & Scott Corp., New York; and the Marine Office of America, New York.

Estimated cost of the seadrome, as installed, is \$4,000,000.



*Out-of-water view of the seadrome in deep draft, showing boat and service deck at stern, hangar and hotel superstructures, with plane on landing deck*



## H. G. Smith Elected Head of Executive Board

H. Gerrish Smith, president of the National Council of American Shipbuilders, was elected chairman of the executive board of the American Marine Standards committee at the annual meeting of the board, in New York on Jan. 25. Captain R. D. Gatewood was re-elected vice chairman and A. V. Bouillon, of the division of simplified practice, department of commerce, Washington, D. C., was re-elected secretary.

Over 100 standards in ship construction, marine engineering and ship operation have been established by the committee and are now being widely adopted by shipbuilders and shipowners in the United States.

In addition to the officers named above, the members of the executive board elected for the year 1932 are as follows: George H. Bates. H. H. Brown, Major General Lytle Brown, Homer L. Ferguson, Theodore E. Ferris, Hugo P. Frear, William Francis Gibbs, Edward G. Gillette, Dickerson N. Hoover, James Kennedy, S. D. McComb, Robert W. Morrell, E. H. Rigg, Rear Admiral George H. Rock, Dr. Herbert C. Sadler, Rear Admiral J. G. Tawresey, Joseph J. Tynan, H. B. Walker.

## Worthington Personnel

Worthington Pump & Machinery Corp., New York, has announced the following personnel changes, effective Feb. 1:

C. E. Wilson, for the past nine years general sales manager, appointed vice president in charge of industrial relations. Mr. Wilson began his career with Worthington in 1899. Clarence E. Searle, for the past 17 years general representative in charge of sales for Allis-Chalmers Mfg. Co., appointed vice president in charge of sales. Mr. Searle became associated with the Allis-Chalmers organization in 1908. William H. Baumes, for the past 14 years treasurer, retired at age of 61. Charles N. Barney, for the past 14 years secretary and general counsel, appointed secretary, treasurer and general counsel. A. L. Prentice, formerly assistant comptroller, appointed assistant treasurer. Walter Lehman remains, as formerly, assistant treasurer in charge of credits. Frank D. Talmage, formerly member of counsellor's staff, appointed assistant secretary.

Appointment of F. A. Clyde of Portland, Ore., as northwest passenger agent for the General Steamship Corp. Ltd., was announced on Jan. 29.

Mr. Clyde will handle primarily the business of the French line, for which the General Steamship Corp.

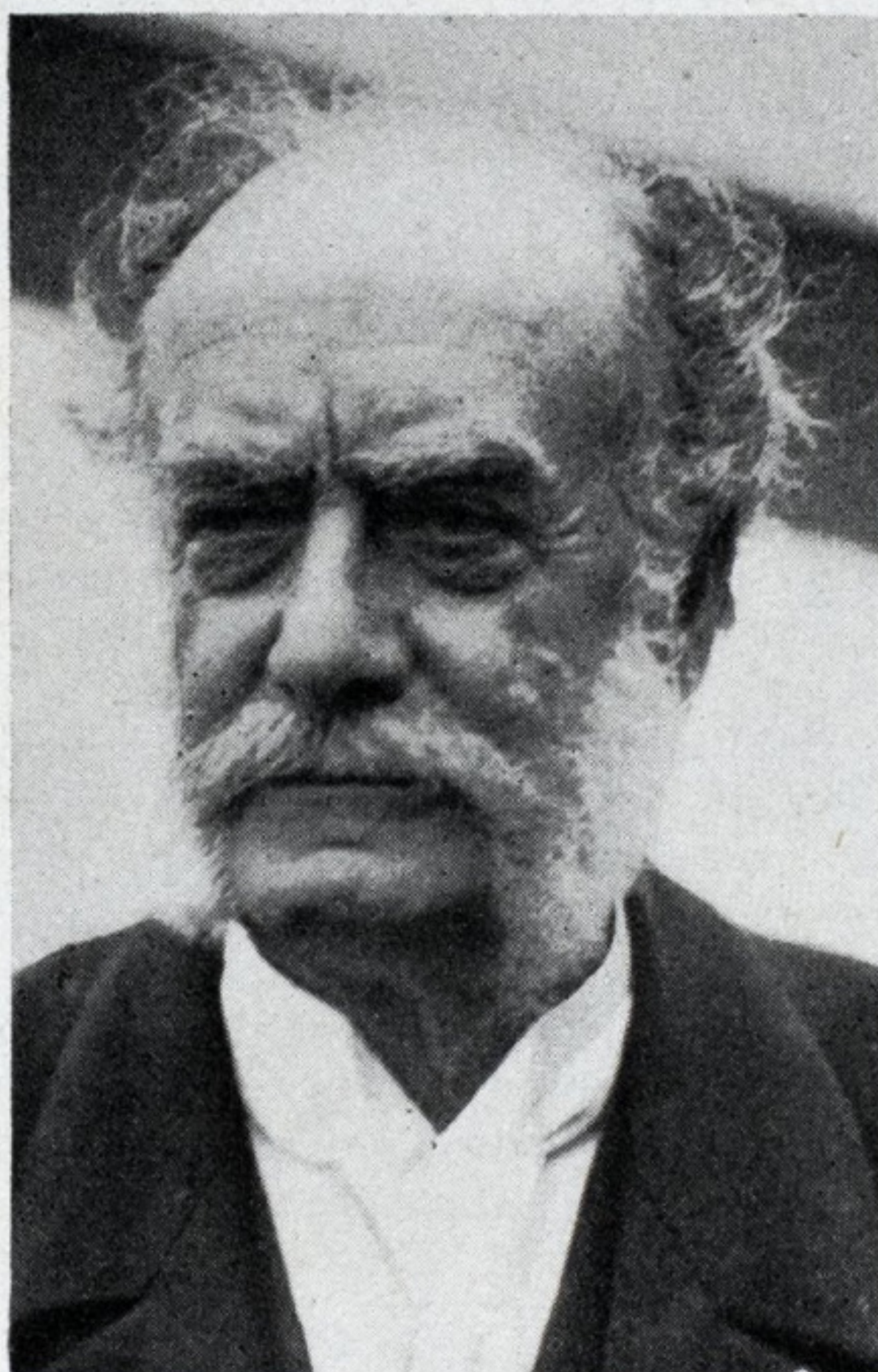
now acts as general passenger agent in Washington, Oregon, Idaho, and Montana.

The Nordberg Mfg. Co., Milwaukee, has announced the affiliation with its present staff of A. E. Ballin as vice-president in charge of sales and engineering, effective March 1. Mr. Ballin was formerly president of McIntosh & Seymour Corp.

## Famous British Engineer Dies in London

SIR ALFRED YARROW, famous engineer and shipbuilder whose chief work was done in the improvement of small vessels, especially destroyers and gunboats, died in London on Jan. 24 at the age of 90.

Sir Alfred concluded his education



at University College school and at the age of 15 began work as an apprentice with Ravenhill & Co., marine engineers, in London. Two years after the founding of Yarrow & Co., in 1866, his first attempt of a purely marine nature resulted in the construction of a steam launch, the Isis. This venture proved extremely successful and 350 similar craft were built at the Yarrow yard. In 1906 he moved his plant to Scots-toun on the Clyde and there specialized in the construction of torpedo boat destroyers, merchant and river steamers of exceptionally shallow draft. Between 1877 and 1879 orders for torpedo boats were received from the governments of the principal nations of the world. These vessels, capable of a speed of 21.9 knots, established their designer's world-wide reputation. It was on one of these that the first Yarrow water-tube boiler, his own invention, was installed.

One of the features of the British naval review held in 1878 was the per-

formance of two torpedo boats built by him, which realized the then extraordinary speed of 21 knots, and when the torpedo boat destroyer was evolved about 1892 he produced the HORNET, which on her official trials attained a speed of 27.3 knots. A few years later the SOKOL, built by him for Russia, touched 30 knots, and about 1911 the LURCHER, constructed by the British admiralty, exceeded 35 knots, while during the war his TYRIAN all but reached 40 knots. Between August, 1914, and November, 1918, the Scots-toun yard turned out 29 destroyers, all but two for the British navy, and it was in recognition of his personal efforts in connection with these vessels, as well as with the so-called "China gunboats," some intended for use on the Danube and others on the Tigris, that he received his baronetcy.

He also established a shipbuilding and repair yard in British Columbia. The development of Yarrow & Co. in late years, its achievements not only in small craft and high-powered craft but the extended use of the Yarrow watertube boiler in some of the largest steamships of the world is a matter of such recent history as to require no further comment.

## Heads International Co.

At a meeting of the board of directors of the Westinghouse Electric International Co., in New York Jan. 27, George H. Bucher was elected vice president and general manager. Mr. Bucher joined the Westinghouse organization Sept. 1, 1909 as a graduate student. He graduated from the Pratt institute in Brooklyn in both steam and machine design and electrical engineering. He was transferred from the graduate student course at East Pittsburgh to the export department in New York Jan. 20, 1911 and on April 1, 1920 was appointed assistant to general manager of the Westinghouse Electric International Co. On July 1 of the following year he was appointed assistant general manager which position he held until recently.

## Owners Elect Chairman

Paul M. Ripley, president of the American Sugar Transit Corp., New York, and in charge of traffic of the American Sugar Refining Co., was elected chairman of the American Steamship Owners association at the annual election held at the association's offices, 11 Broadway on Feb. 2. He succeeds Frank C. Munson, president of the Munson line.

Mr. Ripley is past president of the National Industrial league and is now a member of its executive committee. He is also chairman of the executive committee of the Association of Practitioners before the interstate commerce commission.



## Handling Railroad Cars On Ocean Freighter

By E. E. Pierson

CHRISTEN SMITH, Oslo, Norway, has placed in the transoceanic service an unusual type of motorship for handling railroad equipment. This vessel, named the BELJEANNE, is 428 feet long, of 10,400 tons deadweight, and is of the one-hold type, with adjustable tracks and decking to permit tiers of rolling stock.

Each of the main booms of the BELJEANNE can take a maximum lift of 30 tons. The center of gravity is so low that the vessel can incline

lettered for the Rio Grande de Sul railroad of Brazil. The brake and lighting equipment was of English manufacture to conform to standards fixed by the Brazilian government and was imported and applied at the Pullman plant. All of the cars were shipped on their own wheels, and were taken aboard intact.

### Cunard Passenger Traffic

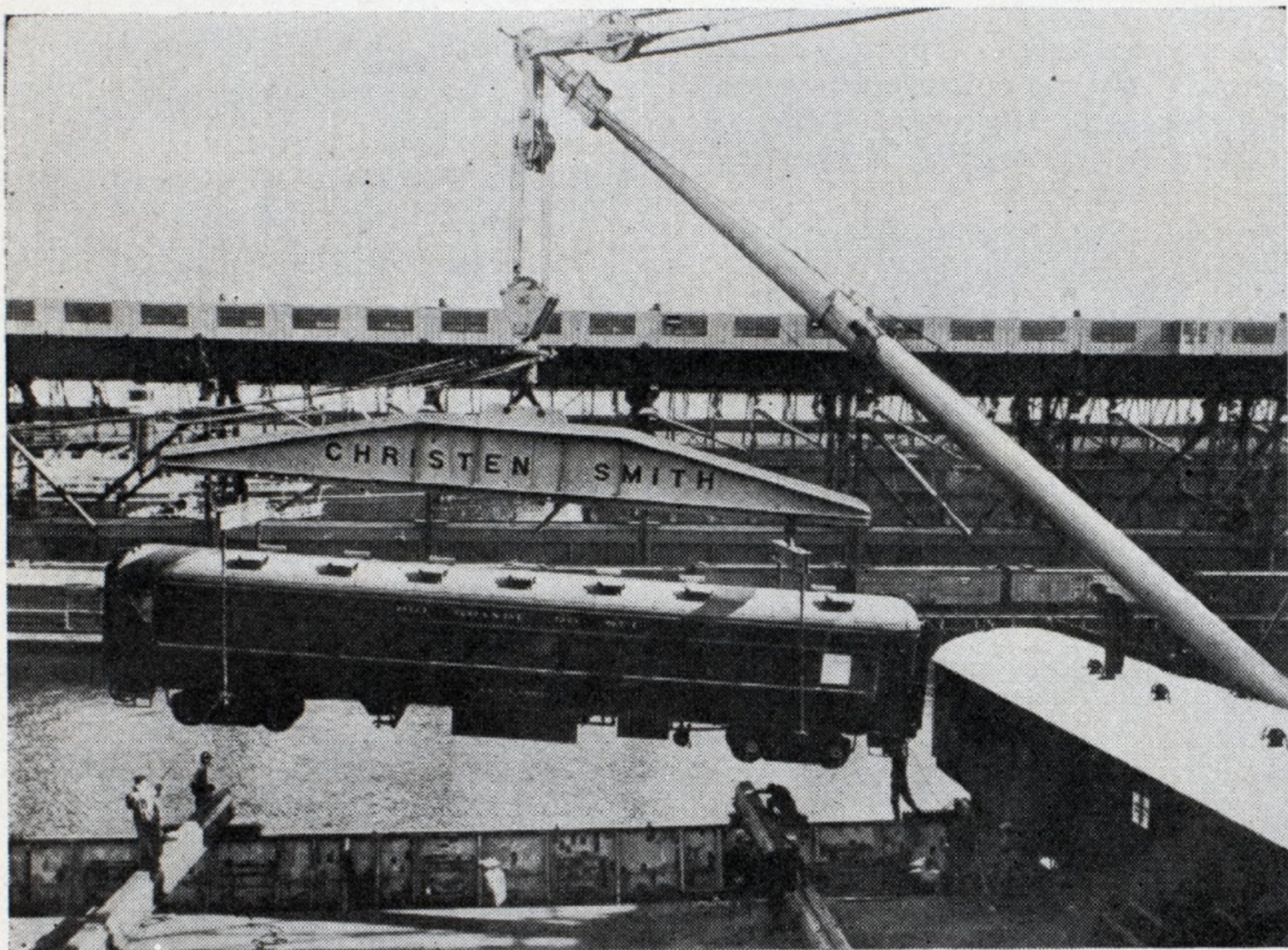
In the Cunard line's report for 1931 it is announced that for the ninth successive year the Cunard and associated lines carried more passengers to and from Europe than any other line or combination of lines, leading its nearest competitor by approximately 25,000.

## New Intercoastal Conference Agreement Approved

The shipping board on Feb. 18 approved the following Intercoastal conference agreement:

"Agreement provides for establishment of a conference of lines engaged in the intercoastal trade eastbound and westbound between Atlantic and Pacific ports of the United States, except Isthmian and Calmar lines, the agreement submitted to become effective as to the signatories provided Isthmian and Calmar lines shall give in writing to the board their separate undertakings to conform to terms of the agreement. The agreement is to continue up to and including Aug. 31, 1932, without right of withdrawal by any line. The parties agree to abide by rates, rules and regulations established by the conference and each signatory is to post \$25,000 penalty bond. Violations of the agreement, if proven upon conference hearing, are to subject offender to penalty to be fixed by three-fourths of the lines present at meeting called for that purpose, except the complaining and defending carriers, such penalty not to exceed four times the freight money involved or the amount of the penalty deposit."

The year 1931 was the worst year in the Clyde's shipbuilding history. The famous river home of ships has been locked tight in the grip of world economic depression. Launchings during 1931 on the Clyde totaled only 152,663 tons, compared with 529,844 tons in 1930 and 756,976 tons in the peak year of 1921, a decrease of over 600,000 tons for 1931 over 1921.

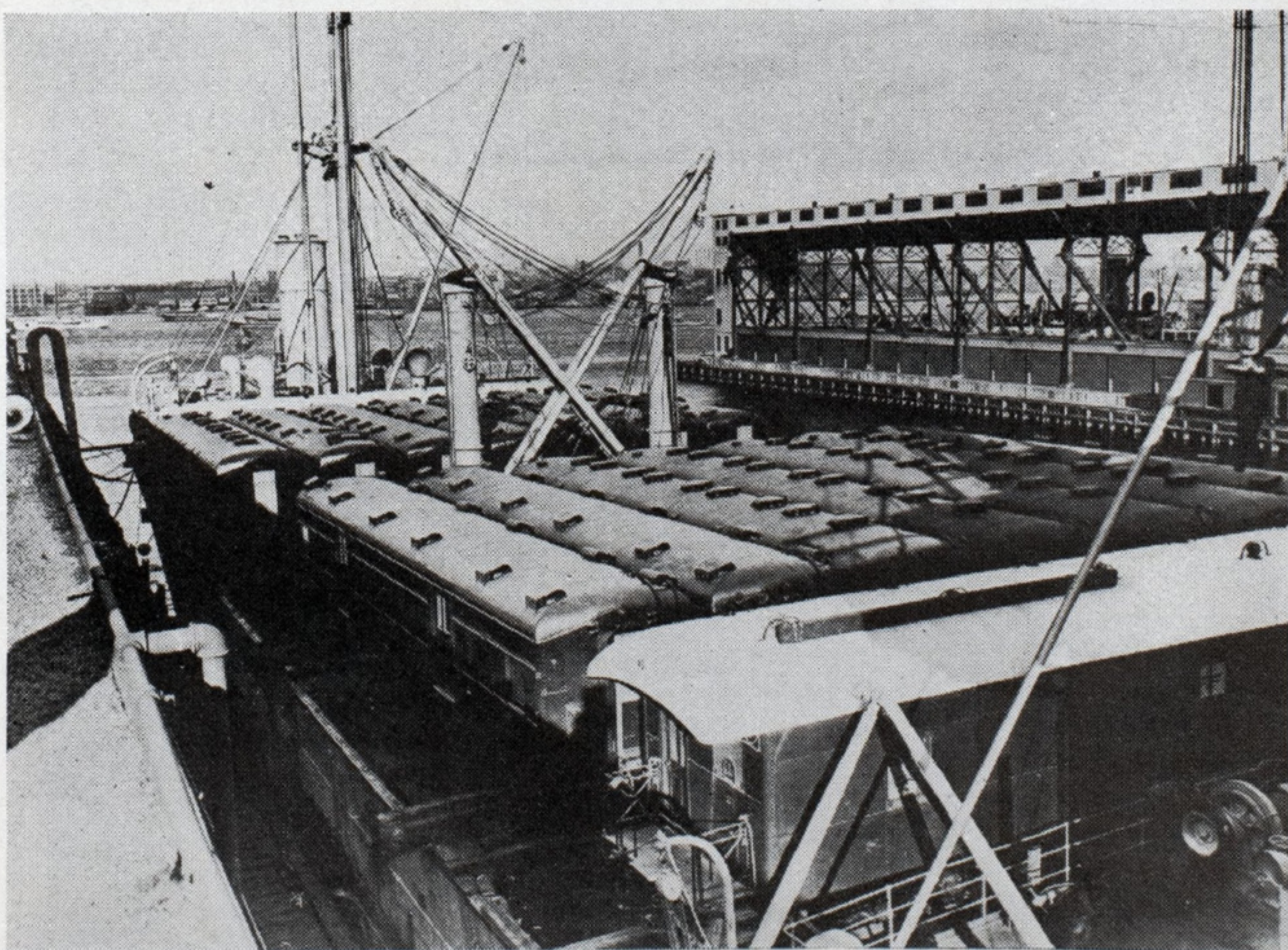


*Norwegian Motorship Beljeanne loaded with American built railway cars at Baltimore for Brazil*

either to port or starboard at an angle of 45 degrees, or perhaps a little more, without danger of capsizing. As the cars are lifted into position in the hold, they are individually lashed to their supporters with heavy steel cable, secured with turn buckles. After all the cars are loaded on a deck, the entire group is lashed together and secured to the deck in a similar fashion. This process is repeated with each succeeding deck, thus making it impossible for any portion of the cargo to shift during a storm.

The Brazilian government railways recently ordered several trains of sleeping cars, dining cars, chair cars, and combination mail and baggage cars, from the Pullman company. Following their manufacture, the trains were handled by the Baltimore & Ohio system to Baltimore, for loading on the BELJEANNE.

All of this equipment was of the narrow gage type, 39 $\frac{3}{8}$  inches, and



*Loading and stowing railway cars on deck for ocean shipment*



# Arc Welding Used in Building Barges and Small Craft

By C. M. Taylor

**T**WO great developments, one here and one abroad, have spread the use of arc welding as a ship building tool in the past year. In Germany, Capt. Herman Lottman of the Wilhelmshaven navy yard has indicated that welding will be standard practice; in America the introduction of an economical shielded arc process has made possible super-strength welding. The first has focused the attention of already interested marine engineers upon welding and the second has removed the doubts which engineers held regarding the strength of welds.

The world knows of the super-efficiency of the German cruiser DEUTSCHLAND which is of rivetless construction. The use of arc welded steel has eliminated weight in the form of rivets, gussets and angles, and many handling operations. The cost of construction was reduced with a saving in time and material and the size of the vessel increased without going above the 10,000-ton limit of the Versailles treaty.

The shielded arc process is the result of metallurgical and chemical research and study of phenomena within the arc. The presence of oxides and nitrides in weld metal has been a major reason for inferior physical characteristics of weld metal. Well known is the affinity of molten steel for oxygen and nitrogen. The obvious solution was to shield the arc with some deoxidizing gas, and early experiments proved the superiority of welds so made but costs were prohibitive for general use.

Today, however, a special electrode of mild steel drawn to rigid specifications, is used. This elec-

trode is heavily coated with a composition which burns in the arc less rapidly than the electrode melts, forming, in effect, a crucible around the arc which shields it for almost its entire length. As this coating burns it gives off a deoxidizing gas which forms a protective envelope around the arc, as shown in Fig. 1. The residue from this coating forms an easily removable slag which protects the hot metal from the air on cooling. With this process it is not exceptional to have weld metal of equal or better physical characteristics than the plate.

Welds made by the shielded arc

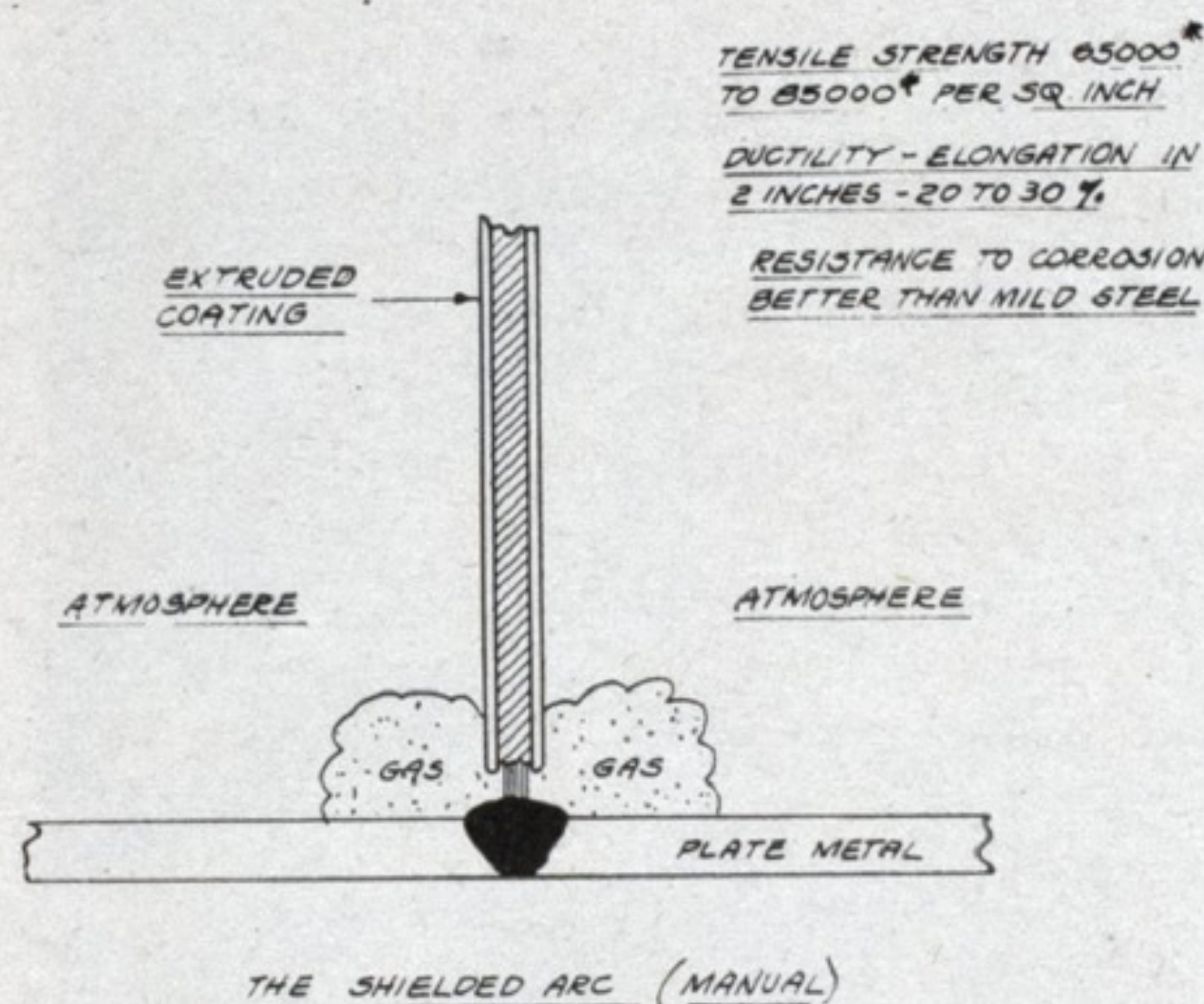


Fig. 1—Diagram showing how a protective gas shields the arc and deoxidizes the metal in the shielded arc process of arc welding

process have the following physical characteristics:

Tensile strength, 60,000-80,000 pounds per square inch depending upon carbon content of parent metal. Ductility, elongation of 18 per cent to 30 per cent in two inches. Resistance to corrosion better than mild steel.

Furthermore the most recent shielded arc processes are used with high welding currents and consequently welding speeds may be in-

creased 200 to 400 per cent. In the face of these obvious advantages the process has been widely used in many industries. It is especially popular with the makers of high pressure vessels and pipe line contractors. Automatically, the process requires a somewhat different method of securing the desired deoxidizing atmosphere. Welding speeds and physical characteristics are even greater with the automatic processes.

Four barges, shown in the accompanying illustration, were built with the shielded arc process by the Sun Shipbuilding and Dry Dock Co. of Chester, Pa. The writer is indebted to T. M. Jackson, electrical engineer, of that company, for the following data in regard to their construction. Five barges were built in all and the general specifications are:

## Principal Dimensions and Capacity

Length overall, feet, inches....	72 0
Breadth, molded, feet, inches	19 4
Draft, feet, inches .....	4 6
Capacity, barrels .....	860
Capacity, gallons .....	36,120

These barges will be used for carrying gasoline and light oils in shallow waters and as floating storage. They are of unusual construction consisting essentially of two separate tanks with deck and bottom plating and stiffening members connecting them and scow ends added. The twin tank arrangement is used as this construction provides ample strength and stiffness without the use of frames in the tanks. Longitudinal frames are used on deck and bottom plating and transverse frames between tanks. Absence of frames in tanks permits quick cleaning when different grades of oil are loaded or a change from oil to gasoline cargo is made. This feature, for the service in which these barges are to be used, more than compensates for the sacrifice in cargo capacity occasioned by this construction.

Plates  $\frac{3}{8}$ -inch thick were used for tanks, deck and bottom. From standpoint of strength alone considerably lighter material could have been used. The  $\frac{3}{8}$ -inch plates were selected because of their longer life under corrosive action of salt water and gasoline cargo. For this reason full advantage of saving in weight of steel inherent in a structure designed for arc welded over riveted construction was not utilized. Very little saving in weight of steel or direct labor and material costs was effected over equivalent riveted construction. Arc welded construction, however, is expected to result in large savings in maintenance and permanently tight joints.

The barges are manually arc welded throughout by the Fleetweld shielded arc process. They were fabricated, assembled, welded and tested to classification requirements complete in the shop. This procedure permitted about 90 per cent of



Barge built by arc welding by United Dry Docks Inc. for carrying water



all welding being done in flat position. Some overhead and vertical welding, however, was unavoidable. Single bevel butt joints with a 5-inch x  $\frac{3}{8}$ -inch backing strap were used for all longitudinal and girth seams of tanks and scow ends. The deck and bottom plates are T-welded to side and bottom of tanks. Stiffening members are intermittent stagger welded. No lap joints are used except where doubler plates are added for mounting deck fittings. Fitting up bolts were used on main shell joints. These were spaced about 12-inch centers through shell and backing plate. After each joint was completed, the bolts were removed and holes filled with weld metal.

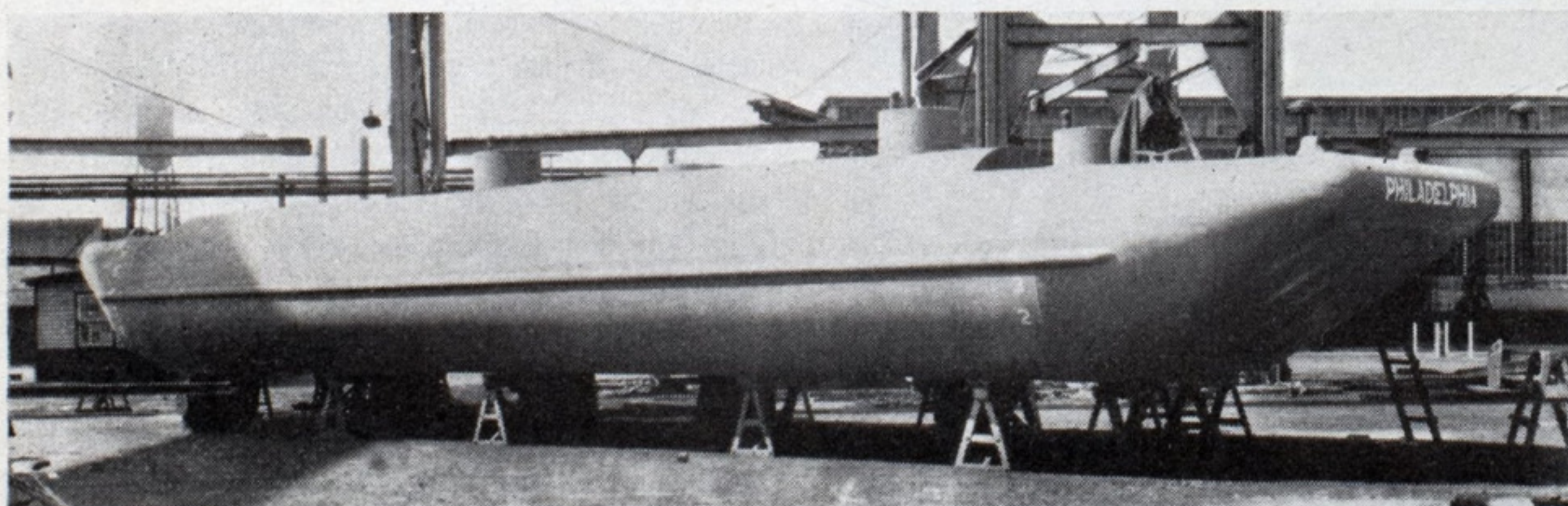
Welding was under procedure control. Operators were tested with the shielded arc process before beginning work on these barges. The following table shows maximum, minimum, and average results of all tests:

Tensile test in various positions	Pounds per sq. in.		
	Max.	Min.	Aver.
Welds—			
flat position .....	75200	70600	72653
Welds—			
vertical position	77600	64000	72200
Welds—			
overh'd position	77500	66100	72138
Seven all-weld			
metal 0.505-inch			
diameter speci-			
mens .....	66500	61500	63300

These specimens show average elongation in 2 inches of 18.5 per cent. Free bend specimens showed average elongation of about 24 per cent in  $\frac{1}{2}$ -inch length of outside fibres of weld metal.

The exponents of welding, when they first realized its possibilities, asserted that it would revolutionize industry. As a fabrication tool, the shielded arc process offers direct con-

*Right—Four barges built for carrying light oils and gasoline. These units were welded by the shielded arc process by the Sun Shipbuilding & Dry Dock Co. Below—Illustration showing graceful lines possible in a barge of seamless construction*



nections with a joint stronger than the members joined. In every application it has made possible a greater efficiency, and improved product at lower cost.

United Dry Docks Inc. is another company which utilizes arc welding to advantage. A very good example of engineering ingenuity is seen in the construction of the barge WATERBOY, shown in an accompanying

illustration. This barge will be used to carry water to the Furness-Withy hotel in Bermuda. The barge was constructed in the builders' Staten Island yard with their trussweld construction. The condensed specifications follow.

Dimensions; length 73 feet; breadth 34 feet; depth on center line 8 feet 4 inches; depth of sides 8 feet. Construction, all-welded steel, trussweld system. Plating, deck 5/16-inch; bottom 5/16-inch; bulkheads 5/16-inch; sides  $\frac{3}{8}$ -inch; ends  $\frac{3}{8}$ -inch. Gunwale and bilge angles 3-inch x 3-inch x  $\frac{1}{2}$ -inch; truss angles 3-inch x 3-inch x  $\frac{1}{4}$ -inch.

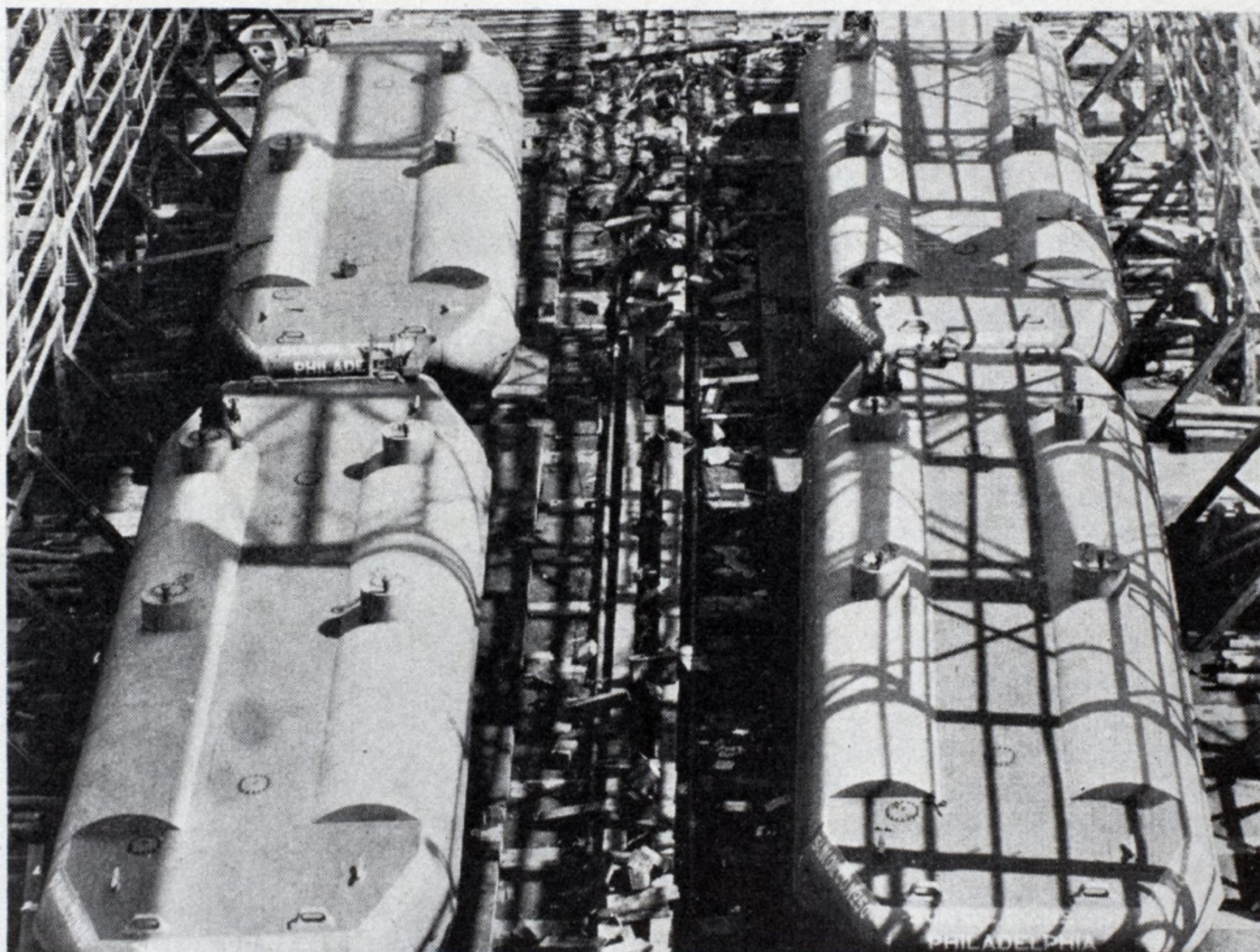
The barge was built with four water compartments, formed by three athwartship bulkheads and one longitudinal bulkhead, extending from bulkhead to end bulkhead. The deck has a camber of 2 inches and bottom has a deadrise of 2 inches. End logs are 18 inches deep. Rakes are 10 feet from ends and are rounded for

continuous welds at the ends. Trusses are welded at their intersection, full member strength. All bulkheads are welded to shell plating and each other with continuous weld on both sides of plate.

The same company also used arc welding to construct a steel landing float at the riverhouse, East Fifty-second street, New York City. This float is 100 feet long, 35 feet wide. The hull is 4 feet deep and has 3-foot freeboard. The landing bays are 25 feet long and 17 feet wide. The runways from the dock are channels pivoted to both the barge and the dock and secured by turnbuckles so that variations caused by the tide may be met and the float secured without the use of anchors or piles.

All the ornamental iron on this float has been fabricated by arc welding as well as all of the posts and other fittings.

To show the versatility of arc welded construction, we will con-



clude with a very interesting application of the process. A tugboat containing no bolts or rivets except where the interchangeability of parts was desired, was built by the Merritt-Chapman & Whitney Corp. of Superior, Wis. This craft is 45 feet long, 13 feet beam. The keel was laid Aug. 1. The vessel was launched Aug. 29 and placed in service Sept. 15. Eight men worked in the yard on this vessel. This tug, the PATTY NOLAN, is powered by a 100-120 horsepower Kahlenberg engine.

The use of arc welding allowed the construction of a strong seamless leakproof steel vessel at the same cost as a wooden boat of similar size. The builder figures that with arc welding instead of riveting, 25 per cent was saved on materials and weight.

easy towing.

Deck fittings consist of three cast-steel cleats on each side, the two forward ones of heavy construction, for towing to Bermuda. All deck fittings were welded on doubler plates, to deck.

Welding of seams are of the overlap type, continuously welded on both sides. All truss members are welded to shell bulkhead plating, with



# Current Supply to Battleship Fire Control System

By William Hetherington Jr.

**S**PECIAL control and signal circuits are today fairly common in the supply and utilization of electricity. And these circuits will increase in extent and complexity as the automatization of industry proceeds and the human element becomes decreasingly a labor factor and increasingly a directive one. For pointers on details of this utilization of electricity as, actually, an extension of the human mind, the electrical engineer in industry and in the central station may profitably go to the modern battleship. Here details of function and assurances of control energy supply are worked out to almost the ultimate degree. An instance is afforded by this description of the control scheme for current supply to a battleship fire control system.

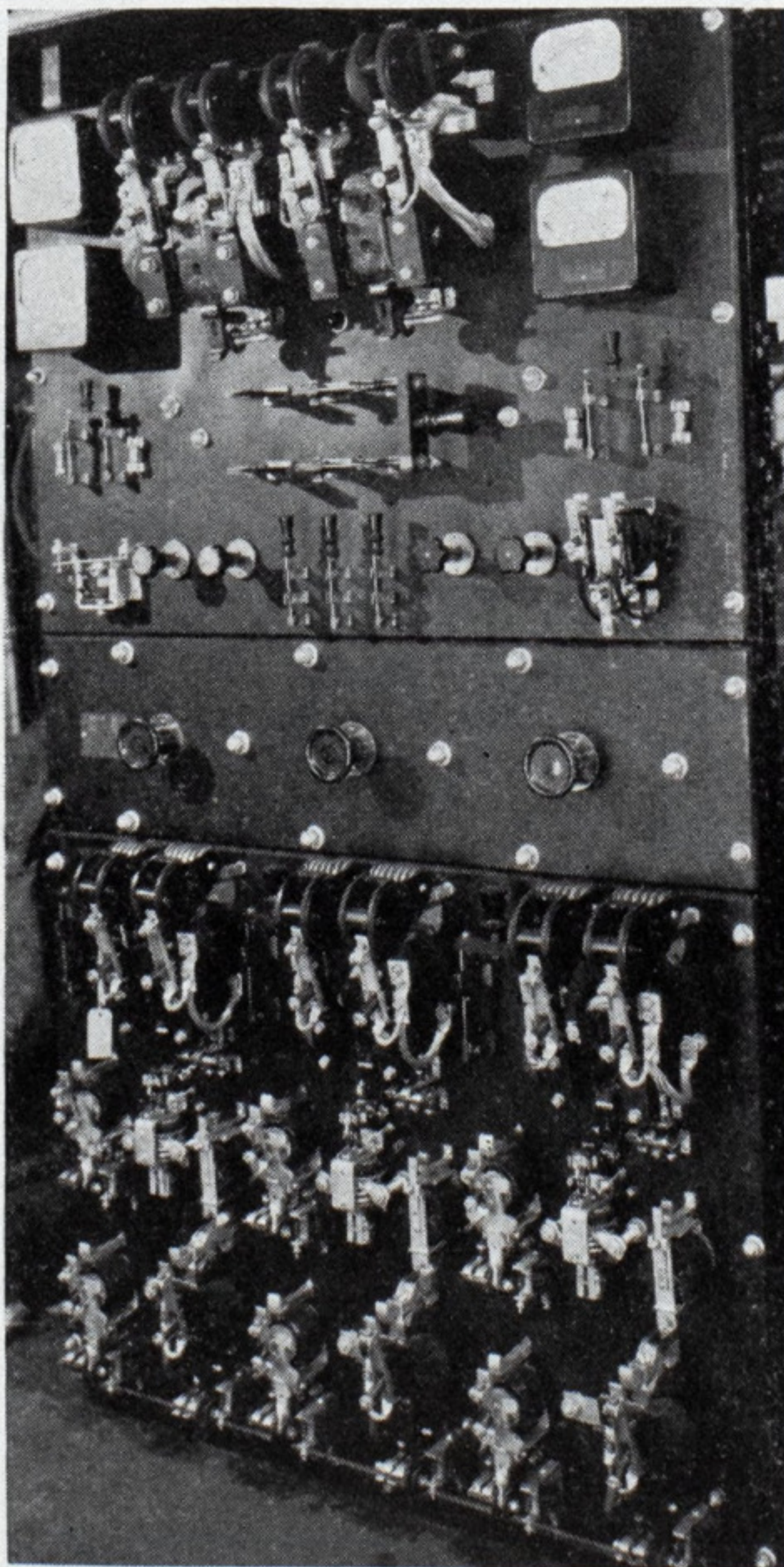
In the fire control stations, intricate problems of ballistics, including corrections for ship speeds, degrees of ship roll, wind velocity and other factors are quickly and automatically worked out and their results in terms of gun elevation, direction and firing time are electrically transmitted to the gun crews. In the most modern schemes of fire control the complex system of calculators, transmitters, indicators and receivers is operated by alternating current. Obviously, the current supply must be under perfect control at all times and must not fail. The latest answer to these requirements is embodied in installations on U. S. S. PENNSYLVANIA and ARIZONA which were lately modernized.

Both installations include three motor generator sets converting from direct to alternating current. The motors are 25 horsepower direct current and the single phase, 60-cycle generators are rated at 25 kilovolt-amperes at 0.2 to 0.4 power factor. The three units are independently controlled from a central board which is designed on the basis of 40 degrees Centigrade ambient temperature. It is of the open type, meeting class A shockproof requirements of the United States navy. Each unit section has a magnetic contactor type controller, semi-automatic, designed as a motor starter, with automatic bus transfer provision for change from power to battery supply and vice versa.

The power supply to the unit panel is selected by a double pole double throw knife switch being closed in one position for supply from the for-

ward main distribution panel and in the opposite position for supply from the after main distribution panel. From the knife switch, the connections are made to one of the double pole magnetic contactors which comprise the bus transfer unit. This unit is controlled by a voltage relay which has its operating coil connected to the main direct current supply. If the voltage of this supply falls to a predetermined value, for which the relay is set to open its contacts, the double pole contactor in the generator supply circuit opens. Immediately a circuit is completed which closes the contactor connecting to the battery circuit. These two contactors are mechanically interlocked to prevent simultaneous connection to generator and battery lines. If at some later period the generator voltage rises to a predetermined value, the voltage relay contacts function to open the battery line contactor and reclose the generator line contactor. Illuminated white and red lenses show, whether connection is to the generator or battery lines.

The three-motor starting units are



Control board for U. S. S. Pennsylvania

identical in operation. A single-pole single-throw knife switch controls starting and stopping the equipment. When the knife switch is closed, all functions of starting and accelerating the motor to full speed are automatic. The operating coil circuit of the field failure relay and the motor shunt field circuit is closed when the control knife switch is closed. This causes the relay contacts to close the operating coil circuit of the main magnetic contactor which closes and connects the motor to the power lines with all starting resistance in circuit with the motor armature. If the motor field circuit be interrupted by a field failure, the field failure relay will open and cause the equipment to shut down.

As the motor accelerates and the starting current inrush falls to values of approximately 85, 90 and 105 per cent normal motor current the three steps of starting resistance are short circuited consecutively under control of the series accelerating relays until the motor is connected to the supply lines. A generator field rheostat is provided for regulating the voltage of each generator unit, the values of voltage being read from two voltmeters suitably connected through voltmeter selector switches.

## Speed of Merchant Ships

A survey made by the National Council of American Shipbuilders shows that more than 37 per cent of the gross tonnage of passenger and combination vessels owned by Italy is composed of vessels which operate at speeds of 18 knots or over. The United States stands second among the nations in the percentage of such vessels, and Great Britain stands fifth. More than 18 per cent of the gross tonnage of passenger and combination vessels throughout the world consists of vessels which operate at speeds of 18 knots or over.

Thirteen per cent of the gross tonnage of ocean-going freighters owned by Great Britain consists of vessels which operate at speeds of 14 knots or over. Norway stands second in the percentage of such vessels, and the United States seventh. About 7 per cent of the gross tonnage of ocean-going freighters throughout the world consists of vessels which operate at speeds of 14 knots or over.

While Italy, the United States and Sweden are well represented in high-speed passenger and combination vessels, they own little or no high-speed freighters. Norway, which stands second in the percentage of high-speed freighters, owns no high-speed passenger and combination vessels. Great Britain alone of all the nations is well represented in the percentage of high-speed tonnage of both classes of vessels.



## Panama Canal Tolls Drop Nine Per Cent in Year

According to the annual report of Harry Burgess, governor of the Canal Zone, traffic through the Panama canal during the year ended June 30, 1931, numbered 5529 commercial vessels, compared with 6185 in 1930, a decrease of 656, or 10.6 per cent.

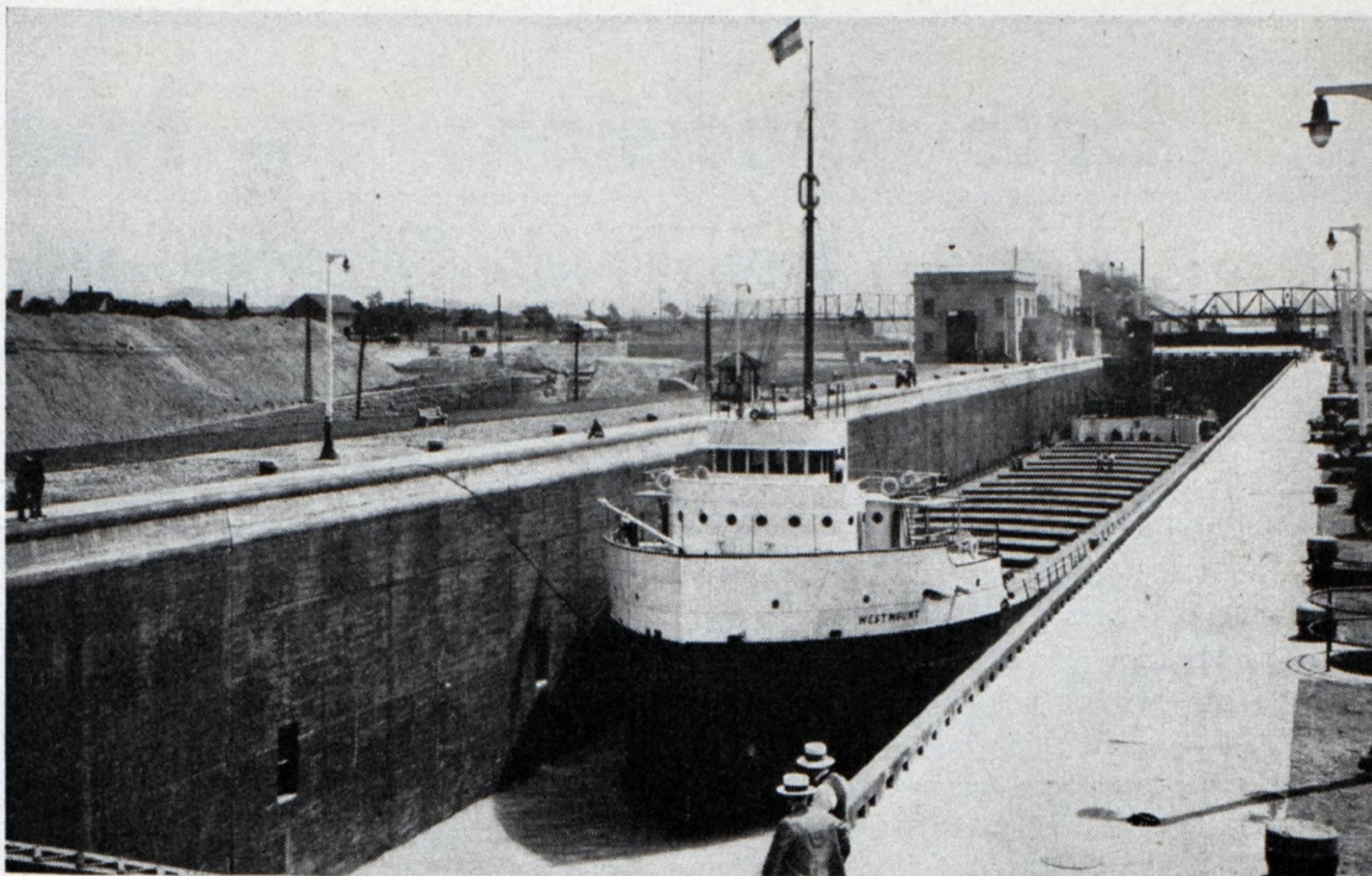
Tolls levied during the year on commercial seagoing vessels amounted to \$24,645,456, compared with \$27,076,890 for 1930, decrease of \$2,431,433, or 9 per cent. Cargo carried through the canal during the year amounted to 25,082,800 long tons, compared with 30,030,232, for 1930, decrease of 16.5 per cent.

The decline in the number of commercial transits and the amount of cargo carried through the canal affected all major trade routes with the exception of those between Europe and the West Coasts of the United States and Canada.

Nineteen nationalities were represented in the commercial traffic passing through the canal during the fiscal year 1931, which was five fewer than the number passing through in the previous year. Vessels of United States registry led in the number of transits, as has been the case during the preceding 12-years. From 1915 to 1918, inclusive, transits of British vessels exceeded those of any other country. In all years the greatest number have been either British or United States.

Cargo carried in vessels of all leading nations was lower than in 1930, with the exception of those flying the Danish and Japanese flags, which showed increases of 19.8 per cent and 9.4 per cent, respectively. Vessels of Dutch registry showed the largest proportionate decrease in cargo carried—22.8 per cent under the preceding year. Cargo carried in British vessels decreased 21.2 per cent; United States, 18.6 per cent; Swedish, 13.3 per cent; French, 11.9 per cent; German, 9.1 per cent and in Norwegian, 4.9 per cent.

Opening of service of the recently formed barge line to operate via the intracoastal canal between New Orleans and Texas points was scheduled for the first week in February, according to announcement of the Louisiana-Texas Waterways Corp. An initial 10-day service will be operated via existing channels through the Plaquemine, La., locks until the lower, and direct, route will have been completed. Service will be extended to such points as Morgan City, New Iberia, Abbeville, Lake Charles, La., and Port Arthur, Orange and Beaumont, Texas. The service will ultimately be extended as the intracoastal canal sections in Texas are completed. Four all steel barges and two diesel powered towboats comprise initial equipment.



**LAST LINK FORGED IN INTERLAKE ORE TRAFFIC:** In 1931, first year of its operation, 295,592 tons of iron ore was shipped through the new Welland canal, connecting Lake Erie and Lake Ontario. Of this, 255,814 tons was Lake Superior ore shipped to Lake Ontario; 39,778 tons foreign ore brought to Lake Erie. Steamer WESTMOUNT, Canada Steamship Lines, is locking through with 9000 tons of Lake Superior ore

## Foreign Traders to Meet In Honolulu in May

The first National Foreign Trade convention to be held outside the continental borders of the United States was summoned on Jan. 11 by James A. Farrell, chairman of the National Foreign Trade council, to meet in Honolulu on May 4, 5 and 6 next.

Invitations to the nineteenth national foreign traders' gathering are being sent to prominent business leaders in Australasia, Japan, China and other countries in the Pacific area, and it is anticipated that in addition to the 1000 American business executives attending there will be a larger number of delegates from foreign countries than at any previous American foreign trade meeting.

Trade with Japan, China and India was larger in volume last year than in 1930, with less recession in value than in other world markets. Honolulu, being the cross roads of the trade routes from America to the Orient and Australasia, is a most appropriate location for an international conference, such as this will be on the trade of the Pacific area.

## The Meaning of Vessel

In the monthly magazine of the Port of London authority, it is stated that the rules of the authority define the term "vessels" officially as follows:

Any ship, lighter, keel, barge, launch, house boat, pleasure or other boat, randan, wherry, skiff, dinghy, shallop, punt, canoe, yacht,

raft, float of timber, or craft whatever, whether navigated by steam or otherwise.

A randan is a boat worked by three rowers, the one amidships, using two oars. A wherry, (besides meaning a liquor, made from crab apples) means a light, shallow rowing boat for plying on rivers. Shallop, the dictionary describes as a light open boat. One may sometimes see a "float of timber" being towed from Surrey docks by a rowboat and it is usually not a very large affair.

## Issues Reference Book

Under the title "Alcoa Aluminum and Its Alloys" the Aluminum Co. of America, Pittsburgh, has issued a reference book giving in concise form information concerning the physical and chemical properties of the aluminum alloys produced.

## Honored by Institute

A large portrait of Capt. Walter M. McFarland, president emeritus of Webb Institute of Naval Architecture, formerly marine manager of Babcock & Wilcox Co., has been placed on the north wall in the dining hall at Webb institute.

This portrait was made at the behest of the board of trustees of the institute as an expression of appreciation of the highly commendable services rendered by Capt. McFarland as vice president and chairman of the educational committee, and later as president of the institute. Since Captain McFarland's retirement on Sept. 1, 1931, he has been living in Washington, his native city.



# Late Decisions in Maritime Law

## Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

**T**HE public right of navigation, it was declared in the case of *Silver Springs Paradise Co. v. Ray*, 50 F. (2d) 356, entitled the public generally to the reasonable use of navigable waters for all legitimate purposes of travel or transportation, for boating or sailing for pleasure, as well as for carrying persons or property gratuitously or for hire, and in any kind of water craft the use of which is consistent with others enjoying the right possessed in common. As to that right a riparian owner, though he also has a qualified or bare technical title to the soil covered by the navigable water opposite his upland, is entitled to no preference or priority, his right in that regard being only concurrent with that of other members of the public, and to be exercised in a way not inconsistent with the enjoyment of the same right by others. He cannot, any more than can one who has no title to riparian or submerged land, acquire an exclusive right to use navigable water opposite his upland for travel or navigation, for purposes of business or of pleasure or diversion.

\* \* \*

**A** SEAMAN is bound to obey, and one acting under direct orders of a superior in exposing himself to danger did not assume the risk although the danger may have been obvious to him.—*United States v. Boykin*, 49 F. (2d) 762.

\* \* \*

**Q**UOTING from *Campania General de Tabacos de Filipanis v. United States*, 49 F. (2d) 700: "A ship may be seaworthy though not in all respects fit for her service, when she breaks ground. The theory is that if she be well found in hull and gear, but the master and crew know that she is not made ready as she rides, and expect to fit her with what is at hand, when the occasion arises, the owner is discharged; it is an error of management if they fail to do so. But existing unfitness, though it arises only from ill handling of adequate equipment, must be so known at the outset; else she is unseaworthy, not being herself suited for her service, and not carrying a crew properly advised as to her needs. Thus seaworthiness may depend upon the knowledge of the ship's company as to how far she has been in fact made

ready. \* \* \* When the owner accepts cargo in an unseaworthy ship, though the defect be such as may be neutralized by care, he imposes on the shipper an added risk; not merely that his servants may fail, in so far as she is sound and fit, but that they may neglect those added precautions which her condition demands. That risk the statute does not impose upon the shipper; he bears no loss until the owner has done his best to remove all risks except those inevitable upon the seas. It makes no difference whether the defect is in shell or hold; with her whole management the owner is charged unless he does his part."

\* \* \*

**T**HE duty of a tug having a tow is to exercise reasonable skill, care and diligence. It is not the law that navigators of craft be held to such a high degree of conduct that it is negligence if they make a mistake of judgment. Errors of judgment do not, as such, constitute negligence. It is not necessary to establish recklessness, but, if competent navigators do what is reasonably required to bring their tows through safely under the circumstances as they exist, then they have lived up to that reasonable skill, care, and diligence which is required by the law.—*PERSEVERANCE*, 49 F. (2d) 785.

\* \* \*

**N**EITHER the helmsman nor the officer of the deck is a proper lookout. A lookout must be constant and vigilant.—*DONAU*, 49 F. (2d) 799.

\* \* \*

**N**O PROVISION should be read into a charter holding the charterer liable as an insurer against fire unless it be stated clearly and in unambiguous language. Whenever a charterer has been held responsible, observed the court in the case of *Warren & Arthur Amadbeck v. Heling Contracting Corp.*, 50 F. (2d) 99, it has appeared that he has promised to return the barge in the same condition as received with the usual wear and tear excepted and has failed to show that his care of the vessel excuses him. A mere promise to return in like condition does not impose an absolute obligation and is conditioned upon the continued existence of the vessel. To establish liability upon the part of the charterer for fire loss, it is necessary for the shipowner to prove some negligence which caused the fire. Accidental fires occur without negligence, and the occurrence of a fire

does not justify an inference of negligence. In the absence of some explanation as to the origin of the fire and evidence tending to show that it was within the power of the charterer to have avoided its occurrence by the exercise of reasonable care, no presumption is raised so as to justify the imposition of liability.

\* \* \*

**A** SHIP or shipowner is not liable for injuries received by a seaman from an assault committed outside the scope of the employment of those on the vessel who are alleged to have assaulted him.—*Bonsalem v. Byron Steamship Co.*

\* \* \*

**A** STEAM tug, when backing out of a slip, was not justified in blindly trusting to good fortune and the warnings of others. It was her duty to have a stern lookout, and her failure in that respect is prima facie evidence that an ensuing collision was due to her fault; and it was incumbent upon her, if she would avoid the consequences which usually attach to such a fault, to show that the lack of a lookout did not contribute to the cause of the collision.—*HERBERT L. PONTIN*, 50 F. (2d) 177.

\* \* \*

**I**N THE case of *United States v. Murphy*, 50 F. (2d) 455, it appeared that an indictment was returned charging the owner of a vessel with having corruptly conspired with members of the crew of such vessel to have them cast the vessel away. The indictment was demurred to on the ground that it charged no offense. The court sustained the demurrer, saying that in order to make the charge an offense against the owner, the law would require that there was insurance on the vessel, or that there was freight on the vessel belonging to some one other than the owner, or that there were passengers on the boat, or some other fact showing that the owner had no right under these circumstances to have her cast away. The mere allegation that the defendants corruptly cast her away does not take the place of averring facts showing corruption. The owner may destroy his own property himself or cause it to be done without committing offense.



# Marine Business Statistics Condensed

## Record of Traffic at Principal American Ports for Past Year

### New York

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1932.....	297	1,821,335	305	1,719,978
December .....	314	1,692,258	343	1,744,190
November .....	304	1,564,284	308	1,542,849
October .....	309	1,626,094	322	1,708,560
September .....	523	2,724,761	522	2,641,711
August .....	541	2,785,703	531	2,739,919
July .....	538	2,626,814	563	2,754,107
June .....	541	2,747,134	526	2,596,749
May .....	478	2,434,601	511	2,542,351
April, 1931 .....	496	2,538,201	527	2,656,992

### Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)  
(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1932.....	51	168,266	36	114,982
December .....	58	180,172	42	132,734
November .....	52	148,335	37	111,969
October .....	69	192,159	57	160,609
September .....	66	172,313	54	155,113
August .....	81	208,854	59	147,948
July .....	76	201,677	59	155,114
June .....	75	218,611	50	127,906
May .....	82	235,108	62	170,497
April, 1931 .....	68	189,113	51	136,453

### Boston

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1932.....	94	286,508	61	208,491
December .....	102	313,977	65	240,908
November .....	75	241,142	52	166,786
October .....	98	325,261	66	241,072
September .....	109	339,482	78	263,783
August .....	131	388,799	98	305,488
July .....	131	362,111	94	290,733
June .....	130	347,787	97	264,467
May .....	108	311,171	91	293,146
April, 1931 .....	107	292,403	89	233,756

### Portland, Me.

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1932.....	13	28,179	14	28,955
December .....	18	38,860	18	37,319
November .....	17	40,991	19	47,514
October .....	17	39,060	16	34,195
September .....	27	48,534	26	52,035
August .....	29	50,249	23	39,273
July .....	24	52,979	22	52,945
June .....	17	28,216	17	26,397
May .....	12	20,821	11	22,573
April, 1931 .....	11	30,000	10	25,765

### Providence

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	8	41,147	4	21,654
December .....	11	41,268	4	17,037
November .....	9	35,826	5	18,040
October .....	6	23,833	6	23,836
September .....	6	20,330	3	11,160
August .....	10	41,671	3	12,240
July .....	6	25,062	7	30,748
June .....	6	21,104	3	12,211
May .....	9	37,120	2	8,674
April, 1931 .....	8	32,848	6	25,101

### Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1932 ....	27	112,542	42	168,762
December .....	29	114,184	40	154,060
November .....	26	103,835	47	182,585
October .....	36	144,875	54	207,518
September .....	32	126,256	49	199,803
August .....	29	114,582	31	119,968
July .....	28	107,694	48	174,226
June .....	30	116,953	35	139,799
May .....	24	94,695	39	142,847
April, 1931 .....	26	104,099	36	141,036

### Baltimore

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	95	301,958	102	328,876
December .....	102	330,709	106	354,320
November .....	99	304,138	98	314,109
October .....	116	388,308	111	385,136
September .....	111	350,556	117	362,970
August .....	122	374,434	118	377,085
July .....	125	393,553	120	379,526
June .....	127	376,049	114	338,066
May .....	110	353,301	118	368,874
April, 1931 .....	131	409,907	139	420,594

### Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	17	53,536	38	104,392
December .....	30	95,762	38	110,614
November .....	23	77,075	47	113,416
October .....	25	76,385	54	146,995
September .....	24	72,333	47	104,255
August .....	21	59,408	54	127,864
July .....	31	77,082	63	149,665
June .....	39	108,710	59	167,488
May .....	22	63,739	49	140,356
April, 1931 .....	14	31,959	40	116,565

### Jacksonville

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	8	26,601	12	27,759
December .....	12	25,453	10	21,501
November .....	6	14,295	8	22,180
October .....	10	25,659	9	17,710
September .....	6	12,463	8	18,888
August .....	21	61,439	24	70,922
July .....	9	18,703	5	9,297
June .....	11	24,902	13	24,517
May .....	8	21,046	7	11,045
April, 1931 .....	15	31,901	5	10,614

### Key West

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	43	67,913	42	71,873
December .....	39	68,392	40	73,365
November .....	40	53,752	42	53,497
October .....	37	57,588	37	59,408
September .....	36	54,012	35	55,610
August .....	37	56,505	37	56,505
July .....	39	59,268	41	62,526
June .....	63	81,660	63	86,349
May .....	83	91,683	80	90,758
April, 1931 .....	60	55,493	51	54,656

### Mobile

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	110	253,792	112	242,378
December .....	98	226,656	85	214,395
November .....	100	214,204	87	189,474
October .....	118	251,661	112	253,721
September .....	104	213,204	102	226,192
August .....	113	217,541	97	194,678
July .....	101	229,960	92	212,634
June .....	88	197,952	93	217,151
May .....	103	194,198	93	194,198
April, 1931 .....	107	251,402	108	242,685

### Seattle

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1932.....	48	200,281	50	216,819
December .....	50	218,018	48	204,111
November .....	48	209,655	50	215,614
October .....	61	257,329	62	267,366
September .....	52	229,687	50	217,517
August .....	48	202,879	51	213,091
July .....	46	207,651	50	222,816
June .....	52	220,915	52	223,750
May .....	43	185,945	43	184,118
April, 1931 .....	50	214,534	48	210,117

### New Orleans

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	171	516,707	171	506,411
December .....	169	482,802	170	504,981
November .....	173	498,800	169	483,099
October .....	174	502,867	195	563,095
September .....	171	474,876	179	508,560
August .....	179	484,245	172	474,230
July .....	184	539,810	172	509,475
June .....	193	561,399	190	562,090
May .....	185	532,046	192	551,459
April, 1931 .....	195	576,251	181	536,678

### Charleston

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net. tonnage	No. ships	Net tonnage
January, 1932.....	24	73,488	22	16,217
December .....	37	108,083	35	96,490
November .....	19	31,125	11	35,588
October .....	20	49,738	22	55,371
September .....	16	29,428	11	19,111
August .....	9	18,293	7	6,274
July .....	13	26,985	10	20,974
June .....	10	23,571	9	21,074
May .....	9	16,418	7	11,884
April, 1931 .....	17	45,890	19	50,033

### Galveston

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	26	73,215	92	292,274
December .....	37	113,327	111	358,950
November .....	33	81,906	101	328,883
October .....	35	80,748	112	354,607
September .....	27	63,896	99	320,127
August .....	39	85,793	79	234,583
July .....	46	107,008	75	226,381
June .....	35	66,342	73	205,074
May .....	27	53,091	69	191,632
April, 1931 .....	26	62,924	68	210,315

### Los Angeles

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No.	Net	No.	Net
	ships	tonnage	ships	tonnage
January, 1932.....	144	578,699	149	594,384
December .....	153	517,165	136	506,985
November .....	147	503,238	142	535,870
October .....	215	720,162	193	678,776
September .....	199	580,683	196	593,882
August .....	199	673,223	204	676,036
July .....	170	622,694	176	636,440
June .....	179	659,029	149	568,208
May .....	210	696,717	194	731,392
April, 1931 .....	225	644,178	209	626,590

### San Francisco

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1932.....	145	635,218	147	646,987
December .....	155	649,915	122	579,608
November .....	167	688,934	149	614,482
October .....	167	688,934	149	614,482
September .....	158	658,088	159	673,120
August .....	140	636,189	160	665,108
July .....	173	743,588	155	679,657
June .....	159	663,047	155	634,838
May .....	161	658,525	163	676,789
April, 1931 .....	158	733,902	170	702,433



# Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

THE building of the new ten-million dollar liner MANHATTAN for the New York-Channel ports-Hamburg service of the United States lines is progressing on schedule, and if all arrangements are carried out as planned, she will enter the service this summer, according to an announcement made recently by P. A. S. Franklin, chairman of the board of directors of the Roosevelt Steamship Co., general agents for the United States lines.

The MANHATTAN was launched at Camden, Dec. 5, was christened by Mrs. Theodore Roosevelt with a bottle containing samples of water taken from historic rivers, streams and springs in the 48 states of the union, and is being fitted out at the special berth in the yards of the New York Shipbuilding Co. at Camden.

The steamer is now 75 per cent completed, and her engines, including main units and auxiliaries, but with the exception of the two high pressure turbines, have been installed. These latter are in the shops ready to be hoisted into the hull by the great 100-ton overhead cranes which move ceaselessly over the new queen of the seas.

Over 1800 workmen are engaged in completing the MANHATTAN. The passenger accommodations of the ship are well advanced; electric fittings are installed in the galleys, and baths and washbasins in the staterooms. The three dining rooms are at the stage where the panelling and decorations are almost ready to go in.

The masts and funnels have not yet been erected. They are ready, but work on the superstructure must reach a more advanced stage before the ship is prepared to receive them. The funnels are egg-shaped, and have the low, raked effect so pleasing to the eye in modern liners.

## Bids for Two Patrol Boats

The United States coast guard, Washington, has invited bids for building two 165-foot patrol boats. The bids for the construction of these patrol boats will be opened at 2:00 p. m., March 8, 1932. The patrol boats have the following characteristics:

Hull of steel, usual construction; length, over all, 165 feet; beam, molded, at main deck, 25 feet 3 inches; displacement, full load, not to exceed 334 tons; diesel engines, twin screw;

shaft horsepower, 1300.

The first boat shall be completed and delivered not more than 300 days after date of receipt of notice to proceed and the second boat shall be completed and delivered not more than 325 days after date of receipt of notice to proceed. Delivery dates may be anticipated as desired by the contractor.

## Big Towboat Launched

The towboat MARK TWAIN, building for the Inland Waterways Corp., was launched Jan. 25 at Jeffersonville, Ind. The craft was sponsored by Mrs. Patrick J. Hurley, wife of the secretary of war.

The MARK TWAIN is of all-steel construction, 169 feet long, 42 feet beam and 4 feet draft. Steam for its 500 horsepower engines is supplied by oil burning boilers. The vessel is capable of moving tows of from 12,000 to 15,000 tons and will carry a crew of 14.

## Launch First Grace Liner

The SANTA ROSA, first of the four turboelectric liners being built by the Federal Shipbuilding & Dry Dock Co., Kearny, for the Grace Line-Panama Mail service, was launched on Feb. 24. She will be followed by the SANTA PAULA, SANTA ELENA and SANTA LUCIA. Each will be 508 feet long and 70 feet beam and will carry 225 first class and 70 third class passengers. They will have a maximum speed of 23 knots and a cruising speed of 19 knots. Each will have a displacement of about 18,000 tons.

Brewer Dry Dock Co., Staten Island, has been awarded contract for repairs to the U. S. engineer dredge W. L. MARSHALL at \$12,979.

Bethlehem Shipbuilding Co. will repair the army tug ST. MIHIEL, New York, at \$5503.

Spedden Shipbuilding Co., Baltimore, has been awarded contract for a patrol boat for the harbor supervisor, New York, at \$138,177, Fairbanks-Morse 500 horsepower diesel engine.

St. Helens Ship Co., St. Helens,

Oreg., will repair the dredge MICHIE for the engineer, Portland, Oreg., for \$4535.

The coastguard headquarters, Washington, takes bids March 31 for bronze propellers, furnished and installed, for patrol, picket and station boats as required during the fiscal year 1933.

Bids also close on the same date for repair parts and machinery accessories for a long list of guard boats for the fiscal year 1933.

Toledo Shipbuilding Co., Toledo, O., has been awarded contract for repairs to the dredge BURTON at \$121,300 and to the dredge TAYLOR at \$41,233 by the army engineer, Buffalo.

## Launch Eastern Liner

The 10,000-ton liner ACADIA, building for the Eastern Steamship lines, was launched Feb. 13 at the yards of the Newport News Shipbuilding & Dry Dock Co. before a large gathering of distinguished guests from Washington, New York, Boston, Nova Scotia and other parts of Canada. Mrs. Calvin Austin, wife of the former chairman of the Eastern Steamship lines board, acted as sponsor of the vessel. She was attended by Mrs. Jeanne Foster and Mrs. H. Moore Richards, both of New York.

The ACADIA and her sister ship, the ST. JOHN, which was launched Jan. 9, will be ready this summer for service between New York and Yarmouth and Boston and St. John, N. B.

The ACADIA and ST. JOHN are the biggest vessels yet built by the Eastern Steamship lines. The ships are 402 feet 9 inches long, with a beam of 29 feet 9 inches. Accommodations are provided for 756 passengers.

Those present at the launching of the ACADIA included Gordon S. Harrington, premier of Nova Scotia, and Mrs. Harrington; W. H. Covert, lieutenant governor of Nova Scotia; Eugene E. O'Donnell, president of the Eastern Steamship lines, and Mrs. O'Donnell; J. A. Downs, chairman of the board of the Eastern lines; Colonel J. A. Coates, first vice president of the Eastern lines; Grant Hall, vice president of the Canadian Pacific Railway Co.; Frank Ross, president of the Eastern Canada Coastal Steamship Co.; W. U. Appleton, general manager of the Canadian National railways, and Mrs. Appleton, and Mrs. Galen Stone.



## Shipping Board Approves Reconditioning Loan

The shipping board Feb. 16 approved the application of the American Scantic Line Inc. for loans from the construction loan fund, to be used in reconditioning, remodeling and improving the vessels SAGUACHE, MINNEQUA, CITY OF FAIRBURY and BIRD CITY. These vessels are a part of the fleet operated as the American Scantic line, which was purchased from the shipping board, under sales agreement dated Oct. 4, 1927.

There will be separate loan agreements covering each vessel, not to exceed three-fourths of the cost of the remodeling and improvements, not exceeding \$177,096, plus three-fourths of the cost of commercial appliances including hotel equipment to be supplied by the owner of approximately \$45,000 each. The reconditioning and remodeling of the vessels will be performed in the yards of the New York Shipbuilding Co., at Camden, the plans and specifications calling for the addition to each vessel of passenger accommodations for approximately 60 passengers, refrigeration of certain spaces and strengthening of vessels against ice damage. The main propelling machinery of the vessels has previously been reconditioned, giving them a speed of approximately 13 knots.

Sealed bids, in duplicate, were received until 3 p.m., Feb. 23, 1932, and then publicly opened, for furnishing all labor and materials and performing all work and delivering at United States vessel yard, Minnesota Point, Duluth, Minn., one wooden piledriver scow, 60 feet x 26 feet x 3 feet 10 inches.

## Approve Loan Application

The shipping board Jan. 26 approved the application of the American Diamond Lines Inc. for loans from the construction loan fund, to be used in aid of the reconditioning, remodeling and improving of the vessels SACO, SAC CITY, TOMALVA, CITY OF ALTON, COAHOMA COUNTY and SACANDAGA. The

vessels to be remodeled are part of the fleet which is operated as the American Diamond lines, and which were sold by the shipping board to the applicant corporation under sales agreement dated Sept. 14, 1931. The vessels will be used in a regular service between United States North Atlantic ports and Rotterdam and Antwerp.

The board's approval authorizes a separate loan on each vessel not to exceed three-fourths of the cost of reconditioning and remodeling, plus an amount not to exceed \$4687 each for spares and other equipment, as follows:

SACO, \$107,700; SAC CITY, \$132,735; TOMALVA, \$118,322.50; CITY OF ALTON, \$124,800; COAHOMA COUNTY, \$124,800; SACANDAGA, \$115,785.

The vessels will be reconditioned in the yards of the Federal Shipbuilding & Dry Dock Co., Kearny. The work will involve betterments and alterations of the main propelling machinery and of the hulls of the vessels to give them a sea speed of 13 knots.

## Repair Contracts Let

Repair contracts have been let by army engineers as follows: New York, tug SAN LUIS, Sullivan Shipyards Inc., New York, \$4690; Norfolk, dredge CHINOOK, Newport News Shipbuilding & Dry Dock Co., \$4902; Peoria, Ill., towboat COMANCHE, Chicago Bridge & Iron Co., Chicago, \$4580.

Quartermaster, Fort Barrancas, Fla., repairs, mine planter CAPTAIN CLARENCE M. CONDEN, Bruce Drydock Co., Pensacola, Fla., \$7816.

New York, repairs, dredge NAVE-SINK, United Dry Docks Inc., New York, \$74,100.

Philadelphia, dredge DELAWARE, Sun Shipbuilding & Dry Dock Co., Chester, Pa., \$27,938, dredge NEW ORLEANS, United States Navy Yard, Philadelphia, \$39,538; dredge ROSSELL, \$35,401, dredge GILLESPIE, \$6472, dredge ALABAMA, \$9029 and dredge, HUSTON, \$10,616, all four latter to Sun Shipbuilding & Dry Dock Co., Chester, Pa.

New York, repairs, dredge W. L. MARSHALL, Brewer Dry Dock Co., Staten Island, New York, \$16,976.

## Launch United Mail Liner at Fore River Yard

The new United Mail liner QUIRIGUA was launched Feb. 6 at the Fore River plant of the Bethlehem Shipbuilding Corp. The new liner was christened by Miss Mercedes Susie Doswell, daughter of Claude D. Doswell, vice president in charge of transportation of the United Fruit Co., the owners. The QUIRIGUA is the fifth of six new United Mail liners contracted for early this year, all to be completely electrified with the General Electric system of turbine-electric propulsion.

The contract for the first three vessels, the TALAMANCA, the SEGOVIA and the CHIRIQUI, was awarded to the Newport News Shipbuilding & Drydock Co. The TALAMANCA recently completed her maiden voyage and is now in service between the United States and Central America. The SEGOVIA, the second of the ships, was burned at her fitting dock at Newport News shortly after her launching. The third vessel, the CHIRIQUI, is to be completed in March.

The remaining three vessels, the ANTIGUA, the QUIRIGUA, and the VERAGUA, are under construction at the Fore River plant of the Bethlehem Shipbuilding Corp. The ANTIGUA, launched Dec. 12, will have her sea trials in March, and will probably go into service late this spring. The QUIRIGUA launched Feb. 6, and the VERAGUA will probably be ready for duty sometime this summer.

## Work on Sistership

Construction of the MANHATTAN'S sistership, now known only as No. 406, is up to schedule.

Eighty-seven per cent of the total steel has been erected, namely 12,998 tons, which goes in at the rate of about 500 tons per week. Part of this weekly total includes some 136,000 rivets. The total number of rivets which will go into the hull of No. 406 is almost three million. To date 2,214,992 have been pounded in. The hull plating, as far as riveting is concerned, is over two-thirds erected.

## Bunker Prices

At New York			At Philadelphia			Other Ports	
Coal alongside per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon	Coal trim in bunk per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon		
Feb. 18, 1932. 4.50@5.00	.65	3.25	Feb. 18, 1932. 4.50@5.00	.75	3.45	Boston, coal, per ton..	\$7.50
Jan. 18.....4.50@5.00	.65	3.25	Jan. 18.....4.50@5.00	.75	3.45	Boston, oil, f. a. s., per	barrel..... 0.67
Dec. 18.....4.50@5.00	.65	3.25	Dec. 18.....4.50@5.00	.75	3.45	Hampton Roads, coal, per	ton, f.o.b., piers \$3.85 to \$4.00
Nov. 18.....4.50@5.00	.65	3.25	Nov. 18.....4.50@5.00	.75	3.45	June 9—Cardiff, coal,	per ton..... 13s 6d
Oct. 18.....4.75@5.00	.65	3.25	Oct. 18.....4.75@5.00	.75	3.45	London, coal, per ton... —s —d	
Sept. 18.....4.75@5.00	.75	3.47½	Sept. 18.....4.75@5.00	.75	3.45	Antwerp, coal, per ton.. 18s 9d	
Aug. 18.....4.75@5.00	.75	3.47½	Aug. 18.....4.75@5.00	.75	3.45	Antwerp, Fuel oil, per ton. 67s 6d	
July 18.....4.75@5.00	.85	3.72½	July 18.....4.75@5.00	.85	3.70	Antwerp, Diesel oil, per	ton..... 82s 6d
June 18.....4.85@5.25	.90	3.84½	June 18.....4.85@5.25	.90	3.80	British ports, Fuel oil... 67s 6d	
May 18.....4.85@5.25	1.00	4.08	May 18.....4.85@5.25	1.00	4.4	British ports, Diesel oil. 82s 6d	
April 18, 1931. 4.85@5.25	1.10	4.32	Apr 18, 1931. 4.85@5.25	1.00	4.60		



## North German Lloyd

(Continued from Page 19)

express service in the world over the same route between Bremen, the Channel ports and New York, on which the company inaugurated its express service 51 years ago, and 75 years after the incorporation of the line.

Since beginning service the BREMEN and EUROPA have a record for 36 crossings with only 1 per cent variation in minutes (not hours) and have carried more first class passengers than any other transatlantic liners. The liners are huge—the BREMEN 51,656 tons, and the EUROPA 49,756 tons—but speed and luxury rather than mere size mark their character. Both ships are believed capable of a speed of 32 knots.

In this year, the year of the seventy-fifth anniversary, the Lloyd fleet aggregates 959,317 gross tons. The liners

weave a web around the world between five continents.

Sealed bids in duplicate will be received until March 19, 1932, and then publicly opened, for furnishing all labor and materials and performing all work for constructing and delivering 20 steel pontoons, 47½ feet x 16 feet x 2 feet 10 inches, 19 trucks and 65 sections, 1170 feet, of 24-inch diameter discharge pipe.

Notice has been given on the Pacific Coast that regulations requiring that two-thirds of the crews of American ships having mail contracts shall be American citizens will be effective on May 22. During the past four years it has been required that all officers and half of the crews of such vessels should be American citizens. Seamen having certificates showing three years spent at sea on American vessels will be accepted as citizens.

## First All-Welded Navy Tug Launched at Boston

The first all-welded steel tug of the United States navy was launched Feb. 18 at Pier 7 Charlestown navy yard in the presence of a large group of naval officers. She was launched by the immense navy yard crane which lifted the tug from the ways and placed her in the water. This method of launching is an innovation.

The vessel was built without the use of rivets, electric welding being used instead. She is 63 feet 7 inches long with 17 feet 6 inches beam and has a displacement of 62 tons. She is equipped with a diesel engine of 180 horsepower and is designed for a speed of nine knots. The cost of construction was \$250,000.

She will be used at the Portsmouth navy yard.

# What the British Are Doing in Shipbuilding

ON THE northeast coast there is a scarcity of work and in all probability very few launches will be made in the first few months of the year. The first order to be placed is with Swan Hunter & Wigham Richardson Ltd. for a vessel of 2500 tons from Tatham Bromage & Co. on behalf of F. K. Warren of Halifax, Nova Scotia. The vessel will be a replica of the MOIRA built by the firm last year for the same company. It will be 257 feet long and will be used for service between points in the maritime provinces, River St. Lawrence, and the Great Lakes, Canada. It is understood that the vessel will be built at the Sunderland yard which has been without work for several weeks. This work will give employment to many men.

\* \* \*

WILLIAM GRAY & CO. of West Hartlepool are making steady progress for the construction of six vessels for various firms. A vessel of 9000 tons will be ready for launching this month. Ship repairing is fairly steady on the northeast coast though the amount of new work received has fallen off recently.

\* \* \*

THE plant and machinery of the Northumberland Shipbuilding Co. (1927) Ltd. at Howden-on-Tyne has been sold by auction by the National Shipbuilders Security Ltd. The total sum realized at the sale was in the neighborhood of £10,000. The shipyard itself was not sold having been leased from the Tyne Improvement Commissioners.

THE immediate outlook in the British shipbuilding industry is exceedingly dull. The output of new tonnage from the Clyde shipyards in January consisted of two vessels of under 2000 tons altogether compared with eight vessels of a total of 31,000 tons in the corresponding month of 1931. Recently work has been started on several new vessels at Port Glasgow and there has been a consequent decrease in unemployment at that center. The shipyards at Glasgow and Greenock, however, are poorly supplied with work and since the suspension of the building of the large Cunard liner at Clydebank the shipyard employees in that district have been completely idle. The two vessels launched in the Clyde district were the L. M. S. turbine steamer SLIEVE MORE of 1338 tons and the coasting steamer ROWAN of 550 tons. The SLIEVE MORE was built by William Denny & Brothers Ltd. of Dumbarton and is a special type steamer of high speed fitted up for the carrying of cattle and horses between Holyhead and Dublin and is propelled by twin screws. She has accommodation for about 75 drovers on the bridge deck. The vessel is 310 feet long and will carry 850 tons deadweight on a draught of 13 feet. She is fitted with two sets of Parsons type turbines with single reduction gearing and two Babcock & Wilcox patent coal-fired water-tube marine type boilers working at a pressure of 225 pounds per square inch on the closed stokehold system.

The ROWAN was built by Scott & Sons, Bowling, to the order of the

Frontier Town Steamship Co. Ltd., Newry. She has a gross tonnage of 550 tons and is built to Lloyds 100 A. 1 class. Her propelling machinery consists of a set of triple expansion engines built by Aitchison Blair Ltd.,

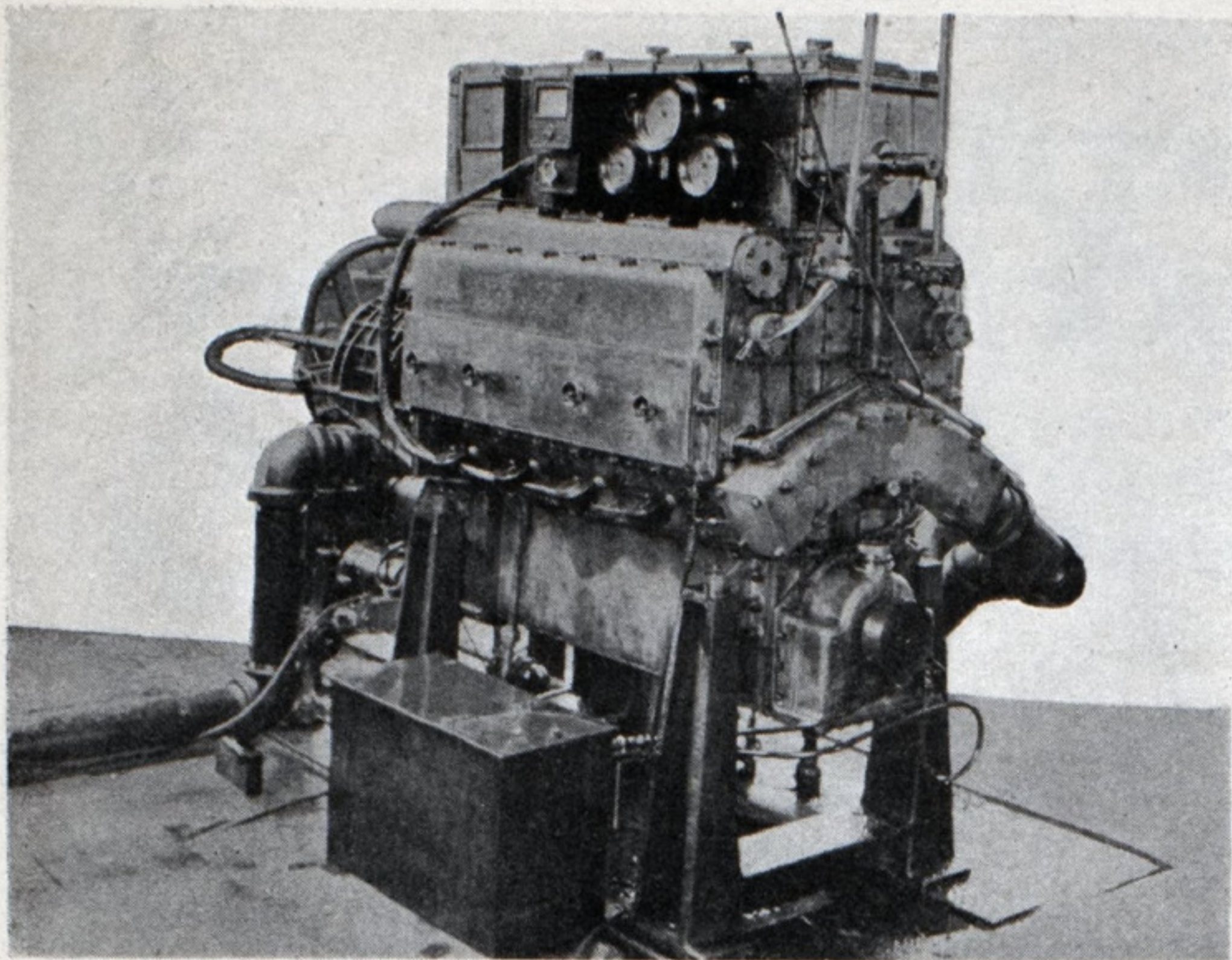
\* \* \*

THE only new order booked during the month was the turbine steamer which William Denny & Brothers Ltd. are to build for the Southern Railway Co. for their Newhaven-Dieppe service. She will be similar to the WORTHING (2288 tons) built by the same firm for the Southern railway company in 1928 but with certain improvements on the hull and in machinery.

\* \* \*

THE new cross-channel steamer ISLE OF SARK has just been completed on the Clyde by William Denny & Brothers and is one of the most interesting ships launched on the river in 1931. Constructed to the order of the Southern Railway Co. she is the first Maier form vessel to be built in this country although a number of ships of this type have been constructed on the continent. She is intended for the Southern company's service between Southampton and the Channel Islands where she will supplement the service carried on by the ISLE OF GUERNSEY and the ISLE OF JERSEY. Like the earlier vessels of the group she will use oil fuel but she has been installed with water tube boilers of the Yarrow type which permit of a substantial increase in steam pressure while the boiler installation incorporates air heaters.





**N**EW two-cycle 8-cylinder high speed diesel engine developed by F. B. Stearns. Two crankshafts. Pistons opposed and inclined. Advantages claimed: Low fuel consumption, simplicity, minimum weight and space for power, vibration practically eliminated. Develops 170 h. p. at 1500 r. p. m.

# New Two-Cycle High Speed Diesel Engine Developed

**O**F INTEREST among recent engineering developments is the 8-cylinder 2-cycle engine designed and built by F. B. Stearns, a pioneer in the automotive industry.

The new engine is compact and is built of aluminum alloys with the exception of such parts as the nickel iron cylinder sleeves, chrome nickel crankshafts and fuel camshafts, the connecting rods and the nitrided steel plunger and bushing of the fuel pump.

In order to overcome vibration the two-stroke principle is employed and the eight cylinders are arranged in diamond fashion with 16 opposed pistons. The upper and lower crankshafts are connected by double helical gearing at the rear of the engine.

As far as known this is the first engine with cylinders arranged in the shape of a diamond. The cylinders are smaller than in the vertical opposed piston type and can be easily scavenged; more even firing also results.

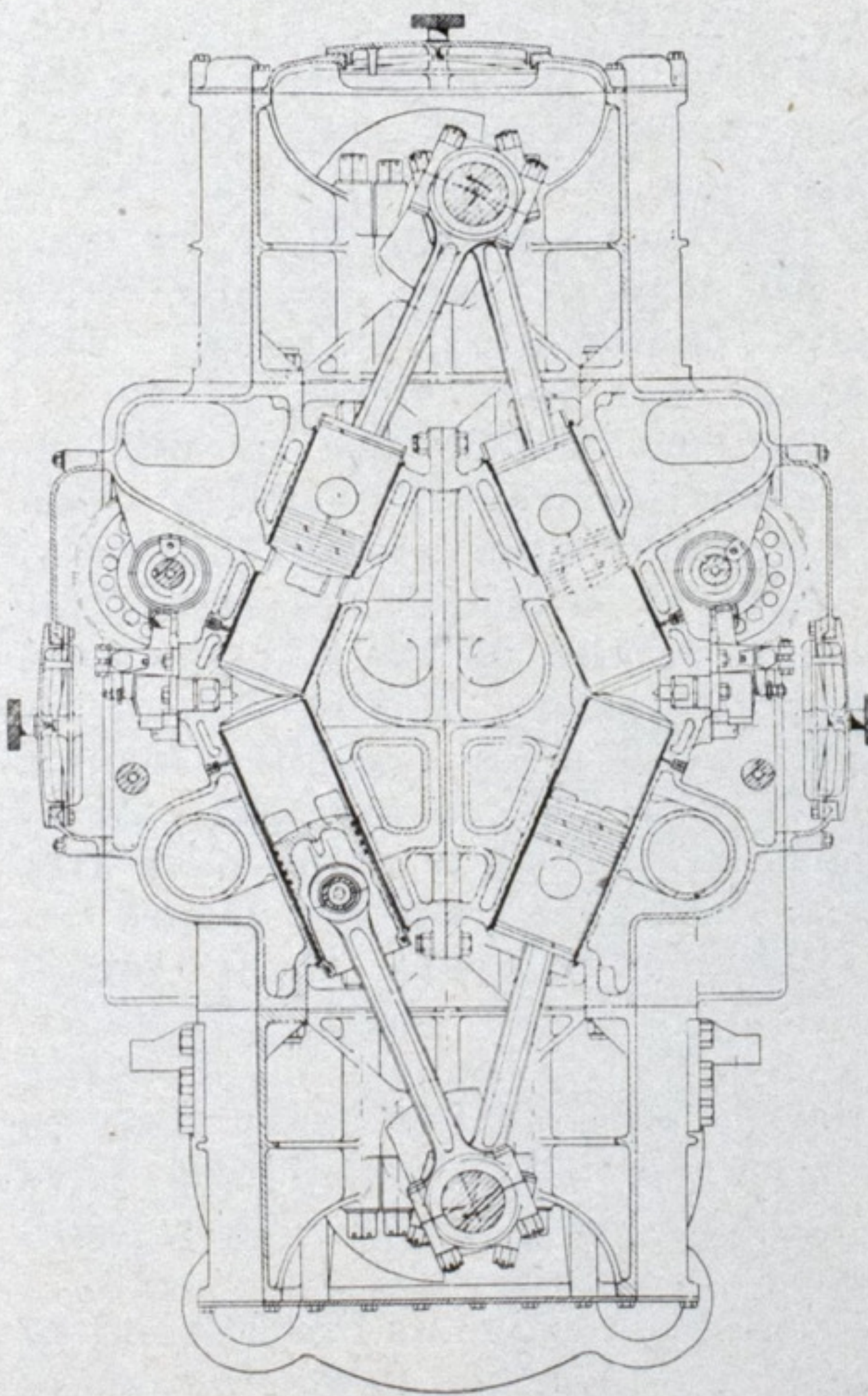
## Occupies Minimum Space

Bore of the cylinders is  $3\frac{1}{4}$ -inch and the stroke 5 inches for each piston, giving a total of 10-inch piston travel for each charge. The engine weighs 2000 pounds and develops 170 horsepower at 1500 revolutions per minute. The overall dimensions are: length, 68 inches; width, 33 inches; height, 50 inches. Length can be reduced 10 inches by using rotary blower built in. A 750 horsepower unit would not increase the space occupied over 10 inches either way.

Running range is from 200 to 1500 revolutions per minute. Based on the use of 26 to 28 Baume oil (a range of fuel from 22 to 40 Baume can be used) consumption is 0.4 to 0.42 pound

per horsepower hour. Maximum combustion pressure is 900 pounds per square inch and compression pressure 450 pounds. Fuel pressure is 9000 pounds per square inch with 26 to 28 Baume oil. Actual tests show a maximum exhaust temperature of 300 degrees Fahr.

In this engine a rotary blower is used for scavenging the cylinders at a pressure of approximately four pounds. As the upper and lower pistons recede on the firing stroke the four exhaust ports at the bottom of



Vertical section through new Stearns diesel engine. Opposed Pistons in cylinders arranged in shape of diamond about center

the cylinder are uncovered, and subsequently the four inlet ports at the top. It is obvious that as the air flows in under pressure an excess is provided which results in supercharging.

Flow of air in one direction is desirable because of the limited time for scavenging and providing a new supply of air. The high speeds, incidentally, are made possible by the thorough scavenging and by complete vaporization of the fuel.

## Nozzles of Special Design

Special fuel nozzles are used and the fuel is supplied by a 3-cylinder plunger pump which maintains constant pressure at each nozzle. The nozzles are of the needle valve type, and are operated positively by a tapered sliding cam and tappet.

Speed of the engine can be controlled with instant response and flexibility within the speed range. Sliding fuel camshafts are mounted at each side, connected by linkage, the one at the left having a control handle. The fuel opening is increased by sliding the shaft fore and aft.

The largest possible effective bearing area is used for piston pins and bushings by cutting away the lower half of each piston bushing. Correspondingly the upper half of each connecting rod and its bushing has been cut away at each side leaving only about  $\frac{1}{2}$ -inch width at the top of the rod. Thus the effective area of the bearing in the thrust direction of the piston is larger in both the piston and connecting rod bushings by approximately one-third that with orthodox design.

A feature of the engine is the use of a cast aluminum alloy block, in which are inserted nickel iron alloy dry liners. Tests have shown that the expansion of the sleeves, the cylinder block and the aluminum pistons are similar, which permits not only efficient radiation of heat but also piston tolerances.

Another unusual feature is that the engine can be arranged to run on gasoline injected through the fuel nozzles. The only changes necessary are the insertion of spark plugs and the lowering of the compression ratio by the use of different pistons. Tests on a similar type of engine show that this can be done satisfactorily with a compression ratio of 8 to 1 as against the ordinary ratio of  $5\frac{1}{2}$  to 1 used in the present type gasoline engine.

This engine has a high brake mean effective pressure of approximately 100, and a clear exhaust at all speeds and loads. Vibration is so slight that a coin placed on edge on the unit remains in a vertical position during the entire speed range.

Cutless rubber bearings manufactured by the B. F. Goodrich Co., Akron, are being installed on the  $7\frac{1}{8}$ -inch shaft of the Atlantic Lighterage Corp. MAPLE LEAF, replacing the lignum-vitae bearing.



# Modern Stevedoring and Dock Management

*Practical Ways to Cut Costs in Cargo Handling*

Conducted by  
H. E. STOCKER

## Leading Coastwise Line Finds Ways to Reduce Cargo Handling Costs

By H. E. Stocker

**T**HE information contained in this article is based on the operations of many coastwise lines, obtained over a period of four to five years. During this time the co-operation and willingness to speak frankly of the methods used to obtain results has been noteworthy of the Eastern Steamship Co. Due to this broad minded co-operation and willingness I have been able to gain an accurate idea of the effectiveness of the stevedoring operations applied under working conditions.

Load carrying power trucks will cut costs as compared with hand trucks but tractors and trailers cut costs to a greater extent because the power unit is not tied up at terminals. The investment in tractors and trailers is smaller than the investment in load carrying trucks and this smaller investment makes it possible to cut costs per ton to a larger extent. This is so well established by experience in many operations that it admits of no theoretical or practical arguments against it.

The Eastern Steamship Co. uses tractors and trailers of the best design effectively. The trailers are of the standard caster wheel type that are used successfully on many railroad and shipping terminals as well as in many industrial plants.

At Piers 18 and 19, North river, New York, cargo is received on trailers at the bulkhead shed between the two piers. Trains of 7 to 10 trailers are made up and

hauled into the Boston ship by tractors. In the ship the tractor is uncoupled and returns at once for another train of trailers.

### Empty Trailers Out of Way

Empty trailers are hauled out to the "farm" and through the doorway of the adjoining pier to avoid the congestion in the bulkhead shed. One door at the bulkhead serves the New York-Portland ship. This door takes care of trucks with small loads so that they are kept off of the pier.

All trailers were recently fitted with automatic couplers. This change has been found to be advantageous and it also permits interchanging trailers between New York and Boston without difficulty.

Fifty to seventy-five loaded trailers are carried on the ships between these two ports. Having part of the cargo on wheels expedites loading and discharging during that part of the year when the ships have free space. The trailers are lashed together and a rope chock placed around the caster wheels. These arrangements keep them securely stowed. The trailers have been in service for many years and have stood up very well under hard service.

Newsprint paper is brought out of the ship on Norman newsprint trucks and placed on trailers on the pier for the long haul to the shed at the bulkhead. Two rolls are placed on each trailer. Packages of magazines,

small packages of tea and other freight, expensive to handle, are placed on skids with crate sides and carried on skids through to destination pier. There the skids are carried into and out of the ship with hand lift trucks hauled by a tractor.

Flat stock paper is handled on non-returnable skids made up at the paper mill and moved through to publisher plant in New York in this manner. Paper shipped in this manner actually weighs more per cubic foot of space occupied in the ship although there is waste space between the bottom of the skid and the deck on the ship. This is because paper on skids is packed tighter than paper in cases and because of the reduction in packing.

Effective use is made by the Eastern Steamship Co. of special removable bodies for hand trucks known as "Re-Bo's." The truckers keep moving. The removable body is dropped and the trucker returns for another loaded body instead of waiting for the men in the ship to unload the one brought in.

Cargo is checked on the pier after discharge. A carload of canned goods, for example, will be piled in such a manner the cases can be quickly checked. If any discrepancies develop, the ship and pier are searched at once.

The way to success has been largely a case of close application by executives capable of clear thinking. No amount of experience is so



good as experience plus clear thinking. Ability to discriminate between facts and falsities is not inherent in an executive. It is the result of training of a very definite order. Experience is made up of facts gained by accomplishment and facts gained by observation of the work done by others. One without the other results in inadequate experience for obtaining the best net results.

Such a vital facility as side ports is itself a reflection of the effectiveness of the supervision. Good management determines accurately whether or not side ports are a profitable change to be made in ships—and acts accordingly.

The success of the Eastern Steamship Co. is the result of excellent supervision. Some executives think they have performed successfully when they give an order. The Eastern Steamship Co.'s executives follow their orders through to make certain the orders are understood and carried out properly. These executives think in terms of net results which is the only way that brings maximum profits.

"My conditions are different," the usual excuse for not doing as good a job as another, does not excuse poor supervision. Even when labor conditions are adverse as compared with labor conditions at some other terminal, intelligent supervision does much to get a good degree of effectiveness.

## Maritime Interests Organize in State of Washington

By R. C. Hill

UNIQUE in its organization and purpose, the Shipping Federation of Washington has been formed to act as the mouthpiece for the maritime industry of the state. It is a federation of local and subordinate bodies and is designed to co-ordinate and supplement the efforts of these organizations. Memberships are not individual but comprise two classes: organization and associate. The former includes organizations of maritime or allied shipping interests within the state. Any corporation or individual benefiting from or interested in shipping is eligible for associate membership. Temporary headquarters are at 719 Second avenue, Seattle.

The idea was sponsored by Hugh M. Delanty, of the Grays Harbor Stevedore Co., Aberdeen, Wash., who has been elected president. Frank P. Foisie, organizer and industrial relations counsel, who has attained a national reputation in his work here, has been selected manager. Official personnel include stevedores, steamship operators, port authorities and other branches of the industry.

Need of the super-organization to represent all branches of shipping and to speak authoritatively for the industry, has been apparent for some time. This lack was particularly emphasized at the recent session of the legislature when various shipping bodies each represented by its own committee presented virtually the same ideas. It is now proposed that the sentiment of the industry as a whole shall be expressed by the new federation.

### Divided Into Eight Districts

The twenty or more ports of state have been segregated into eight districts from which ten trustees are selected, no district having more than three. Thus each section of the maritime portion of the state is enabled to have a voice in the conduct of affairs.

The purposes of the federation are outlined as follows:

1. To promote and foster waterborne commerce and allied industries.
2. To enlarge the area of agreement among the members insofar as their interests are common.
3. To foster the spirit of co-operation between employees and employers by the growth of understanding, tolerance and good will.
4. To assist the members through group technical services and research activities which the industry requires and which the members cannot individually develop, such as:
  - (a) Studies of insurance costs and coverage.
  - (b) Securing sound interpretation and administration of the state and federal workmen's compensation acts.
  - (c) Advocating state-wide accident prevention.
  - (d) Promoting industrial, political and public relations.
  - (e) Developing, adopting and publishing standard practices and ethics.

Of the eight districts in the state, Puget Sound ports comprise six. The seventh covers Grays Harbor and Willapa Harbor, the eighth Longview

and Columbia River ports. It is provided that each organization and/or associate member shall have equal voting representation. The constitution states that the principles of local autonomy and federation shall prevail co-ordinately; autonomy in matters purely local, otherwise authority centered in the federation. Membership shall be voluntary but members only shall share in the benefits.

Heretofore, it is asserted, the shipping industry as a whole and many firms and individuals, who have contributed nothing to the general good, have benefited by the efforts of local organizations. One object of the federation is to obtain more general financial support and co-operative interest from companies and ports which have in the past shared in the results obtained by organization activity without assuming their share of the expense.

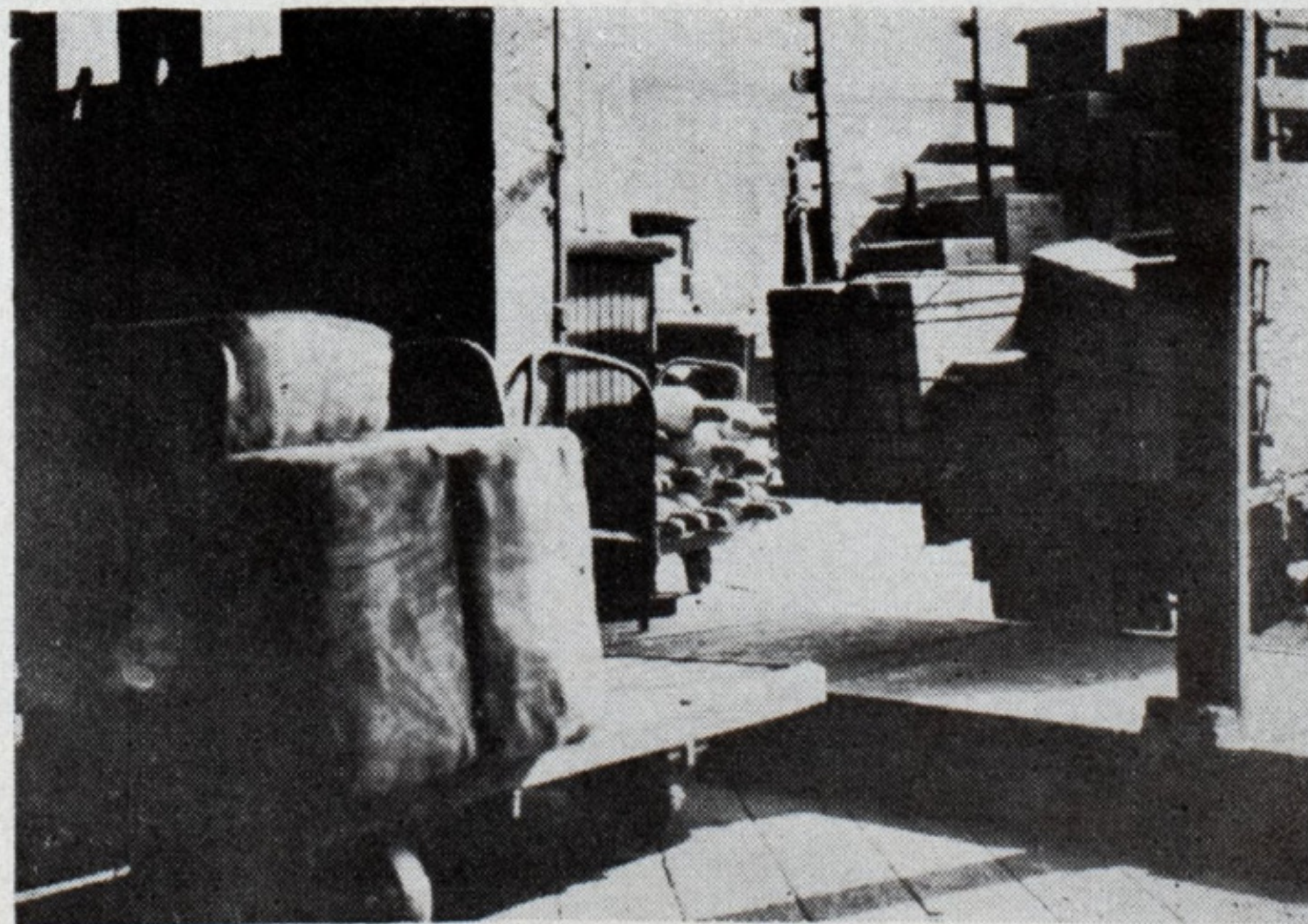
To finance the Federation, dues for shipping companies have been tentatively fixed at ½-cent per ton of cargo or 1000 feet of lumber handled; associate members \$2.50 per month. It is not the intention to solicit individual members who already belong to local groups but to fix the federation fee at \$2.50 per month per member of such subordinate organization. In the past, practically all the larger steamship companies have been contributing tonnage fees towards the support of port labor organizations and will participate in the work of the federation by paying these funds into the latter's treasury in support of the enlarged program.

### Represent Subordinate Groups

Such organizations as the various port bodies, Propeller club, Maritime association of Seattle, Merchants exchange, foreign bureaus of chambers of commerce, Waterfront Employers association, Northwest Tugboat Owners' association, Shipbuilders' club, Pilots association and board of marine underwriters are representative of the subordinate groups who have either joined the federation or

(Continued on Page 36)

Modern methods in use on coastwise lines. Receiving cargo at the bulkhead of the Eastern Steamship Co. Terminal at New York





# Jettison Obsolete Methods in Cargo Handling

By H. E. Stocker

**I**N THE past six years the writer has visited a large number of marine terminals. The outstanding fact is that a large number of stevedoring methods and equipment in use are obsolete—many years behind the best practice under any particular set of controlling conditions.

Tractors and trailers have proved successful in marine terminal operations for over ten years, yet some lines are using two-wheel hand trucks almost exclusively. The two-wheeled hand truck is a necessary piece of equipment on any terminal but it is not the kind of truck to predominate in most operations. Handlings are reduced by utilization of trailers, and operations speeded up. This is true when hauls are short, as well as when hauls are long. By the use of mechanical equipment, the size of the terminal handling unit is increased, from a few cases to 60 cases on a trailer, and the heavier unit is handled economically.

## Keeping Up With New Methods

New types of slings are being developed. Unless an organized effort is made to learn of developments of this character promptly, money is lost.

Safety engineering does not get the consideration it deserves. The low premiums paid where the supervision of working conditions is good, proves this point. Incompetent safety engineers are not a reason for refusing to utilize the profitable knowledge that safety engineering has developed. The responsibility is upon shipping company executives to use as great care in selecting safety engineers as they do in selecting any other important men connected with the organization.

The reason for the large extent of obsolete methods and equipment is largely due to the "My conditions are different" complex and the inability of the men in charge of stevedoring operations to visit other terminals and study the methods used by other lines. "My conditions" are *different* in a large number of cases, but *controlling conditions* are *not* different. This costly complex will pass if men learn more of the activities of others.

Regardless how good a man is, he can always learn something by visits to other terminals. I have been in the shipping business 15 years and yet practically every time I go on a terminal I learn something new.

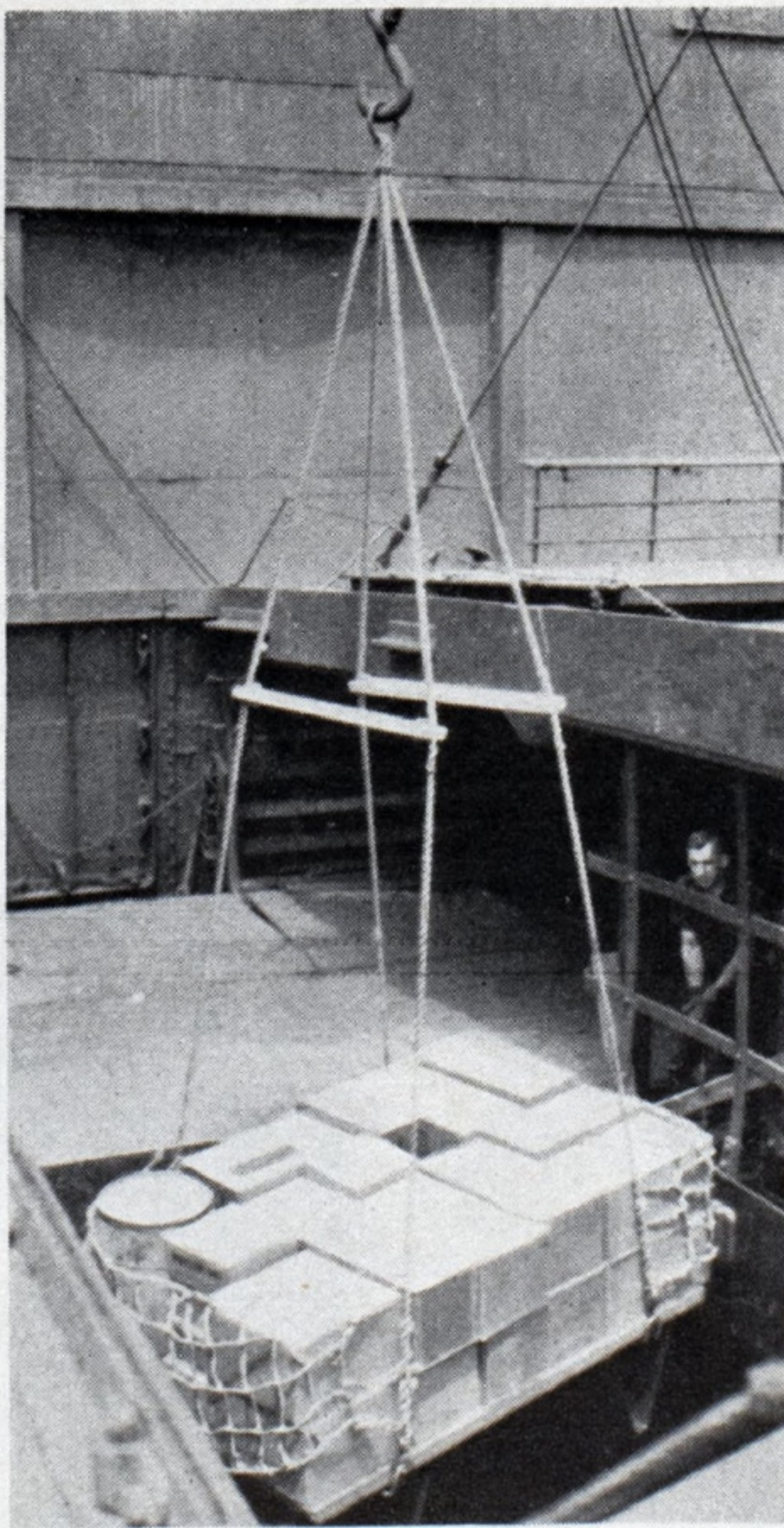
The lack of knowing what is going on is a distinct loss in dollars and cents. Even if all profitable develop-

ments were availed of eventually, there would be a long delay which would be costly. The sooner a new method becomes effective, the greater becomes the aggregate profits from the new method adopted.

My visits to marine terminals during the last six years have disclosed the distinct need for a better interchange of information between the men in different organizations. I have found only two companies who refused to give me the information I was seeking. It is significant that one of them, according to the consensus of opinion, is one of the worst managed companies in the American shipping industry.

The knowledge of a large number of able men is available for any company provided they provide the "machinery" for acquiring and utilizing this information.

The development of a more effective interchange of information should be based on the successful methods found in other parts of the shipping industry and in other industries. The trade press is considered a valuable source of information. Associations



*Slings a skid overall at the Morgan Line (Southern Pacific S. S. Co.) Terminal at New York*

and institutions bring men together for the discussions of problems. Time should be allowed executives and others to visit the operations of other lines. This may mean that the organization must be increased but the additional expense is well justified by the results obtained.

## Marine Interests Organize

*(Continued from Page 35)*

have been invited to do so.

Committees include legislative, labor, membership, insurance, accident prevention, compensation and related interests. The industry senses the introduction in legislative bodies in the not distant future of bills which may have a vital bearing on the future of shipping and shipbuilding and it is regarded as essential that maritime interests shall be prepared to present their case aggressively and unitedly. Some progress has been made in the past by individual organizations in defeating hostile legislation or in having desired bills enacted. Greater progress can be made under the new plan.

In the insurance field it is proposed to pool information and make a study of costs and coverage. The organization probably will set up machinery for claims arbitration in this field. Efforts will also be made to amend Washington insurance laws along the lines adopted by older states.

## Atlantic Passenger Lines Will Discuss Rates

Members of the North Atlantic Passenger conference are to meet in Paris about April 1 to discuss readjustments of rates and sailing schedules of the transatlantic lines for the coming season. It is understood that the principal subject of discussion will be ways and means for increasing tourist travel to Europe. There is a growing sentiment in favor of further reductions in fares, as it is held by many agents that the reductions in de luxe accommodations and the regular first, second and cabin class fares, which were announced last December for both winter and summer seasons, did not offer a sufficient attraction to induce a great volume of business.

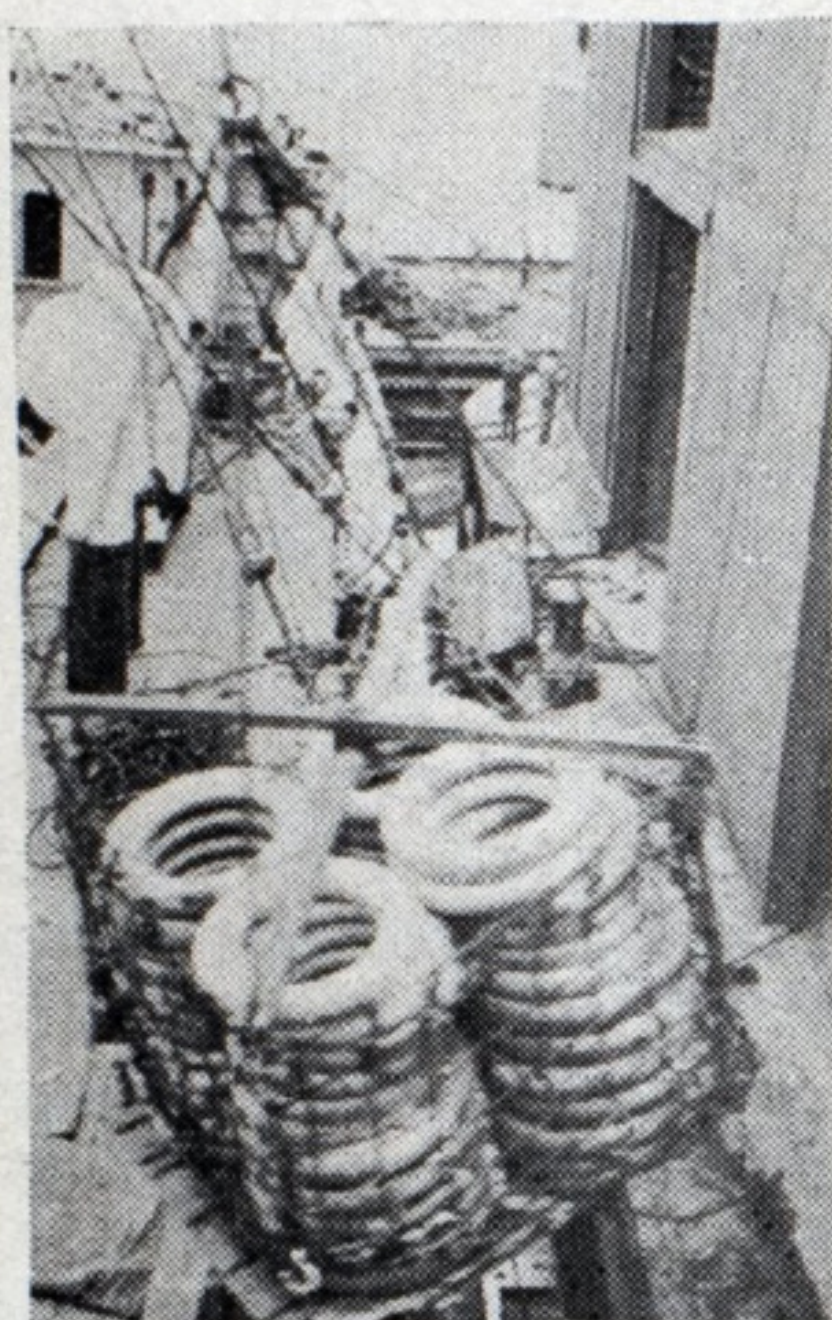
Another subject likely to be discussed is a suggested pooling agreement such as has already been tried on a smaller scale by the German, Italian and Japanese lines. Elimination of the designation of "cabin ship" and operation of these vessels as first class liners with a differential rate also has been suggested. These vessels would then carry first and tourist class passengers. This subject also is reported to be on the agenda of the Paris meeting.



# Useful Hints on Cargo Handling



**T**HE disadvantages of steel hatch covers are met with principally when deck cargoes are carried but designs have been developed to take care of this difficulty. Another objection offered is that if a steel hatch cover is struck by a slingload of cargo and damaged, it means a shipyard repair job. This is true also of steel strongbacks used with wooden hatch covers, or winches. There is a limit to the expense that can be



*An efficient sling with net and header for handling platforms*

afforded to protect against careless workmen.

A ship's captain raised the question of the ability to keep steel covers watertight. If any such trouble should develop tarpaulins could always be used in the same manner as they are used with wooden hatch covers.

Conveyors are used at Searsport, Me., for loading bags of potatoes.

## On Spending Wisely

**U**NDER any condition of business, but particularly under present business conditions, it is considered by the best executives vital that each overhead dollar is expended to the best advantage. Under present conditions, a dollar expended wisely on reducing stevedoring costs can mean more net profit than a dollar expended in reducing fuel costs. The test is the net return for each dollar expended, giving little weight to intangible results and little or no consideration to ratios, theories, principles and opinions, except as ratios, theories, principles and opinions are

*THIS page is being devoted to short items on all matters having to do with the more efficient turn-around of ships. These items are intended to be of a helpful nature.*

*We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.*

a guide pointing the way to facts. Following such a course has proved very profitable.

## Use of Mechanical Aids

**T**HE old tradition that trailers cannot be used effectively except when the haul is over 300 feet is unsound. The persistence of this idea in some places is due to lack of analyzing the cargo handling problem and the possible uses of tractors and trailers. The economies resulting from use of this equipment depends on actual terminal conditions and tractors and trailers are successfully used where hauls are short.

Increase in number of men on a terminal reaches a point where they are in one another's way and the increase in accomplishment per added man becomes less and less. This condition gets worse until actual decrease in results is the result.

Cribs should be erected for the special protection of valuable cargo and very small packages and for commodities of moderate value which are for one reason or another experience unusual pilferage. Cases should be checked in and out of crib.

Special cargo space should be provided on ship board and cargo checked in and out by responsible officers having sole access.

Discharging pulpwood at Rotterdam by means of a special type grab has expedited discharging 100 per cent. Formerly the wood was made into slingloads by hand and ships gear used for hoisting overside. Using ships gear 500 fathoms per day was discharged. With the newly invented grab 1000 fathoms a day are discharged.

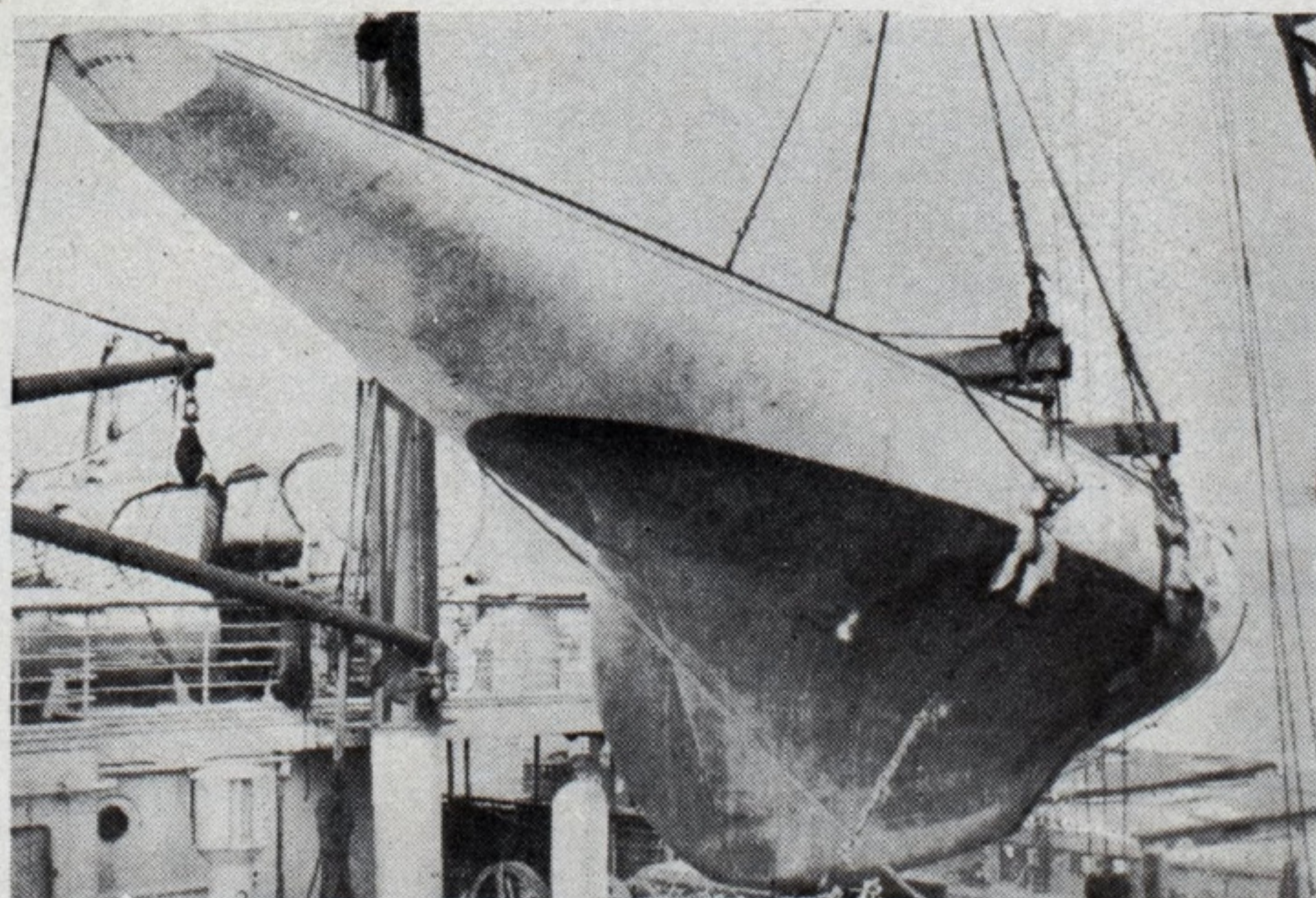
Stone, scrap iron and other commodities are also handled with grabs. The worst kind of small scrap can be handled cheaply.

## Rubber Tires for Trailers

**R**UBBER tires for trailers are proving to be more advantageous than they were a few years ago due to the development of a better compound. Draw-bar pull is less than when steel wheels are used, there is less grinding and wearing action on the floor, less dust, less noise and the loads are not jarred from the trailers as frequently as when steel wheels are used. One operator has found that longer trailer trains can be pulled because rubber tired trailers do not creep sideways on making turns.

Tinplate is handled on hand trucks by a coastwise line. A truck is brought to the pile in the box car. Two men pick up a box of tinplate and place it on the truck which is then lowered to the floor. The rest of the boxes of tinplate are placed on the top of the first box. Dropping them on the flat the boxes are not damaged.

*YACHT Monette, weighing 27 tons, brought out from England on the R. M. S. Majestic being put over the side at New York. The Monette is reputed to be the fastest of her class.*





# Reviews of Late Books

*Freshwater*, by George A. Cuthbertson, cloth, 315 pages, 9 x 6 inches, published by The McMillan Co., New York and supplied by MARINE REVIEW for \$7.50, plus 15 cents postage and in Europe by the Penton Publishing Co., Caxton House, London.

This book is designed to be of interest to all, those who want to know all they can about the ships and those who want a general story of Great Lakes history with a glimpse at men, ships and events. For the first 200 years the story is of war, conquest and naval engagements involving the destiny of nations, but since the early years of the nineteenth century there has been no war and the blessings of peace are manifest in the great development of water-borne commerce. The book is a history of ships but deals mainly with the evolution in the types of ships developed under changing conditions and the ships chosen for detailed description and illustration indicate primarily the progress attained at various times in response to the demands of war and peace.

The romance of the great historical drama or of the great individual characters in such drama is not emphasized but is merely referred to as incidental to the descriptions of the ships themselves, presented in sequence and briefly associated with such salient facts of navigation, topography and cultural development as are essential to a proper understanding of the subject.

Each chapter is devoted to an outline of the development of lake shipping, both naval and commercial, with particular reference to the outstanding political and social events of its period, together with a summary of each phase of development and of the principal types of ships which were built thereunder, avoiding, however, great technical detail. Special attention has been given to the period of the Seven Years' War (1755-1762) which may be said to mark the real beginning of lake shipping.

The volume is illustrated with a series of excellent pictures showing early types of lake craft prepared by the author for the permanent marine exhibition of the Canada Steamship lines. A number of the illustrations are in the form of beautiful color plates. The tireless research and high order of draftsmanship and artistic talent of the author deserve particular commendation.

*Brown's Nautical Almanac*, published by Brown, Son & Ferguson Ltd., Glasgow; paper, 738 pages, 5½ x 8½ inches; supplied by publisher and by MARINE REVIEW, Cleveland, for \$15.

This is the fifty-fifth annual edition of *Brown's Almanac* and contains several of the more important tables from *Pearson's Nautical Almanac*, recently taken over by Brown's. The book contains the usual wealth of nautical information, brought up to date, and includes various astronomical tables and calculations, time and distance tables, distance between ports, tide tables and tabulations of lights, buoys and beacons. Port charges form an important commercial section and the technical articles on statutory regulations, meteorology, nautical instruments, etc., deal with modern requirements.

*Diesel Reference Guide*, by Julius Rosbloom, cloth, 292 pages plus directory listing, 8 x 10 inches; published by Industrial Institute Inc., Jersey City, N. J., and supplied by MARINE REVIEW for \$4, plus 15 cents postage, and in Europe by the Penton Publishing Co., Caxton House, London.

This volume is a book for reference purposes and instruction on modern diesel engineering, land, marine, locomotive, aero-service, automotive and portable duties. It contains also a directory of manufacturers of diesel engines and products essential in diesel services and is profusely illustrated, containing also tables, formulae, etc. The author has aimed to create an authentic and authoritative work, the data contained in the book having been carefully selected to suit the needs of engineers and those interested in diesel engines. The language used throughout is practical. The various types and makes of engines described have been chosen chiefly as an exemplification of specific categories in diesel engineering. This applies also to accessories essential in diesel practice.

*Applied Gyrodynamics*, by Ervin S. Ferry, professor of physics, Purdue university; cloth, 277 pages, 9 x 5½ inches; published by John Wiley & Sons Inc., New York, and supplied by MARINE REVIEW for \$4, plus 15 cents postage, and in Europe by the Penton Publishing Co., Caxton House, London.

The purpose of this book is to bring gyrodynamics out from behind the integral signs and to present it to the acquaintance of engineers and students having the mathematical equipment of the ordinary graduate of engineering or physics. It is the outgrowth of lecture notes of a course that has been given for several years. The first chapter is preliminary to the subject of gyrodynamics and includes the definitions and laws of physics as-

sumed in the subsequent chapters. In the second chapter are developed the laws of gyrodynamics upon which are based the various gyroscopic devices used in industry. The gyroscopic pendulum with such applications as the gyro-horizon and gyro-sextant are considered in the third chapter. The fourth chapter is devoted to the consideration of antiroll devices for ships. In the fifth chapter the principles upon which the gyro-compass depends are developed and each of the five makes of gyro-compass installed on ships in 1931 is described. The last chapter considers the dynamic stabilization of a statically unstable body by means of a gyroscope. The methods used for stabilizing monorail cars are described and reasons for failure of the models built are indicated.

\* \* \*

*Transporting the A. E. F. in Western Europe, 1917-1919*, by William J. Wilgus, deputy director general of transportation, A. E. F.; cloth, 612 pages, 9½ x 6 inches; published by Columbia University Press, New York, and supplied by MARINE REVIEW for \$12.50, postage 15 cents extra, and in Europe by the Penton Publishing Co., Caxton House, London.

This account of the railroad and water transportation of the American Expeditionary Forces in Europe, and preachment on the mistakes there made, is written for the American citizen who knows little or nothing about this important aspect of war, and particularly for the younger generation in the army and in the railroad and water transportation fields of civil life, upon whose shoulders some day may rest the responsibility of bearing a similar burden when perhaps the enemy will not be held in check by allies while we are getting ready. The book is illustrated with a number of maps.

\* \* \*

*Pocket Companion-Abridged Edition, 1931*, by Carnegie Steel Co., Pittsburgh and Illinois Steel Co., Chicago; paper, 320 pages, 6 x 9 inches.

The purpose of this book is to place in the hands of users of structural steel advance information as to certain changes which it has been found desirable to make in the series of CB sections. Time has not permitted the preparation of the twenty-fourth edition of the complete *Pocket Companion* and the abridged edition, 1931 has been substituted.

Complete data pertaining to CB sections, American Standard and other structural sections most suitable for use in bridge, building, car and ship construction are included in this book. Safe loads and other data for structural sections are in accordance with the standard specifications of the American Institute of Steel Construction, revised Nov. 1, 1928.

Although books for the two companies are issued under different covers, the contents are identical.



# Up and Down the Great Lakes

Deeper Draft in Welland Canal—Awarded Medal of Honor—Lake Levels  
—Shows Increased Earnings—Death of George V. Callahan, Marine Editor

ACCORDING to a statement made by Alex J. Grant, engineer in charge of the Welland canal, ships transiting the canal during the coming season will be able to carry a maximum draft of 20 feet. The maximum permitted length will remain 550 feet overall, as during the past season. The 20-foot draft permitted for 1932 is an increase of two feet over last year. This increase in draft will very probably lead to a gain in cargo handled at Toronto. According to Gen. J. G. Langton, general manager of the Toronto Harbor commission, Toronto handled 64 per cent greater tonnage during 1931 than in 1928.

## Awarded Medal of Honor

As a reward for saving the lives of 27 sailors during the past 10 years, Capt. Charles Mohr was presented a congressional medal of



Capt. Charles Mohr

honor at the meeting of the International Shipmasters association in the Perry-Payne building, Cleveland, Feb. 26. Capt. Mohr began sailing the Lakes when he was 17 years of age and has been a master of lake vessels for the past 22 years. In addition to the congressional medal of honor, application has been made to the Carnegie Hero Fund commission by the Lake Carriers association for recognition of Capt. Mohr's life saving work.

Capt. Mohr saved seven sailors from the *OUR SON* which foundered off Sheboygan, Wis., Sept. 26, 1930. At that time, he was master of the *WILLIAM NELSON* of the Valley Camp fleet with which he has been connected for the last six years. Capt. Mohr is 54 years old.

Portable Machinery Co. of Illinois, subsidiary of A. B. Farquhar Co., York, Pa., has been organized at Chicago and is occupying a building at 4444 Elston avenue, that city, for an assembly and stock parts plant for

the company's freight handling conveyors. R. F. Tomlinson, vice president, has been placed in charge of the Illinois company, and this company is concentrating particularly on uses of its equipment at Great Lakes ports and for shippers using water transportation.

## January Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of January as follows:

Lakes	Feet above mean sea level
Superior .....	602.25
Michigan-Huron .....	578.22
St. Clair .....	573.87
Erie .....	571.20
Ontario .....	244.35

Lake Superior was 0.11 foot lower than in December and 0.15 foot higher than the January stage of a year ago.

Lakes Michigan-Huron were 0.08 foot lower than in December and 0.96 foot lower than the January stage of a year ago.

Lake Erie was 0.66 foot higher than in December and 0.20 foot lower than the January stage of a year ago.

Lake Ontario was 0.41 foot higher than in December and 0.59 foot lower than the January stage of a year ago.

## Shows Higher Income

FitzSimons & Connell Dredge & Dock Co., Chicago, shows earnings which place that company among the relatively few that had a higher income in the last year. Net earnings of the company in 1931 totaled \$170,166, which is equivalent to \$2.54 a share on the 66,821 shares of capital stock outstanding. In 1930, the company reported net earnings of \$138,699.

A bronze replica of a statue which stands at Gloucester, Mass., honoring men who follow the sea, was presented Jan. 31 to F. B. Smith by David Gaehr on behalf of the schools of the Lake Carriers association, Cleveland. Students in the classes of marine engineering and navigation contributed to the purchase as a token of their appreciation of Mr. Smith's interest.

Until last spring, when retirement

was compulsory, Mr. Smith was actively engaged in an engineering advisory capacity with the Pittsburgh Steamship Co., although past 80.

## Great Lakes Shipping Men Mourn Marine Editor

George V. Callahan, for 37 years marine editor of the *Plain Dealer*, Cleveland, died at his home in Cleveland on Feb. 23 following a heart attack. He was 67 years old.

Affectionately known as "The Skipper" to hundreds in the marine field on the Great Lakes, Mr. Callahan established a reputation for honesty, fairness and trustworthiness that won for him the distinction of being the best marine editor in the Great Lakes district and the confidence of all the marine fraternity.

He was frequently in possession of advance information that no other person outside the members of the companies concerned could possibly have. One of the greatest tributes paid Mr. Callahan was by the late William



G. V. Callahan

Livingstone, president of the Lake Carriers' association at a meeting of the association in Detroit. When a question came up which threw the association into executive session, all but members were asked to depart. "That does not apply to you," added Mr. Livingstone turning to Mr. Callahan, "for you are one of us."

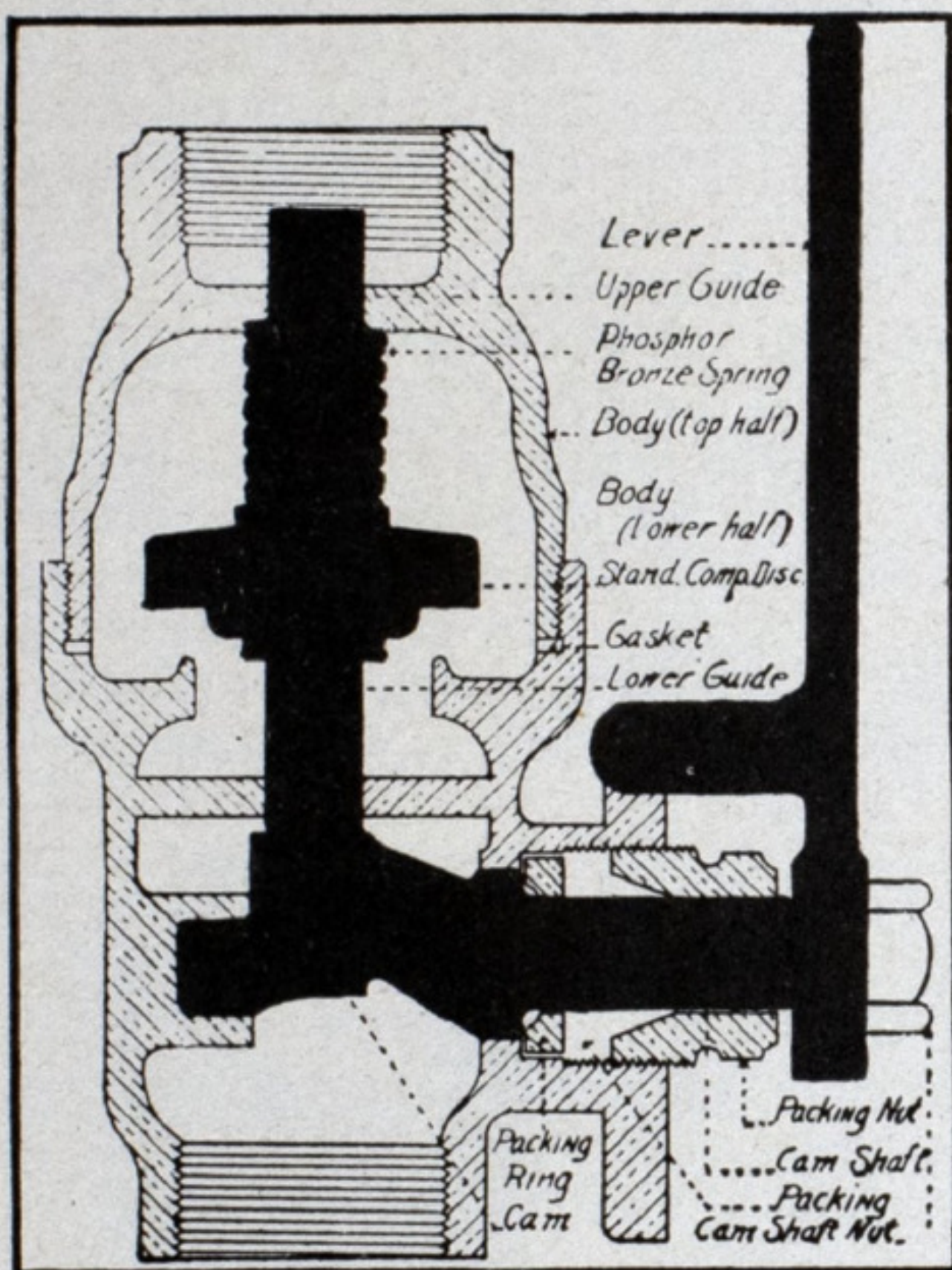
In 1901 Mr. Callahan as a reporter was aboard the *TASHMOO* in its famous race with the *CITY OF ERIE*. His statistical knowledge of Great Lakes shipping was extraordinary and many relied upon his memory for facts in the trade. His marine news column was read each day all the way from Buffalo to Duluth. He took his work not only seriously but when vessels were in distress and lives endangered or lost, he suffered keenly. His knowledge of the topography of the Great Lakes was uncanny.



# Equipment Used Afloat and Ashore

Quick Opening Air Valve—Automatic Sewage Expeller—Signal Apparatus  
—Arc Welder—Recording Thermometer—Motor Driven Adjustable Saw

THE mechanical details of a unique air valve are shown in the accompanying diagram. It is a quick opening and closing valve and is either full on or full off. It cannot be left partly open because the instant the cam is turned past center the pressure and spring close the valve, avoiding leakage of air. The cam action is the mechanical principle used and this up-down movement eliminates all friction at seat. The valve cannot be forced



Murdock Q. O. C. Air Valve

or jammed at the seat, because the instant it is down on the seat the cam is disengaged, idle. It is closed and held tight by pressure. The spring is an auxiliary in case the valve is installed in horizontal or diagonal positions. The valve does not require re-grinding. The disc is standard and renewable and the gland or stuffing box can be repacked without taking the valve from the line or shutting off air. This product is known as the Q.O.C. air valve and is made by the Murdock Mfg. & Supply Co., Cincinnati, O.

A NEW line of cleaning compounds, for use wherever there are cleaning problems, regardless of size or intensity, has been put out by the Cee-Bee Laboratories Ltd., Los Angeles.

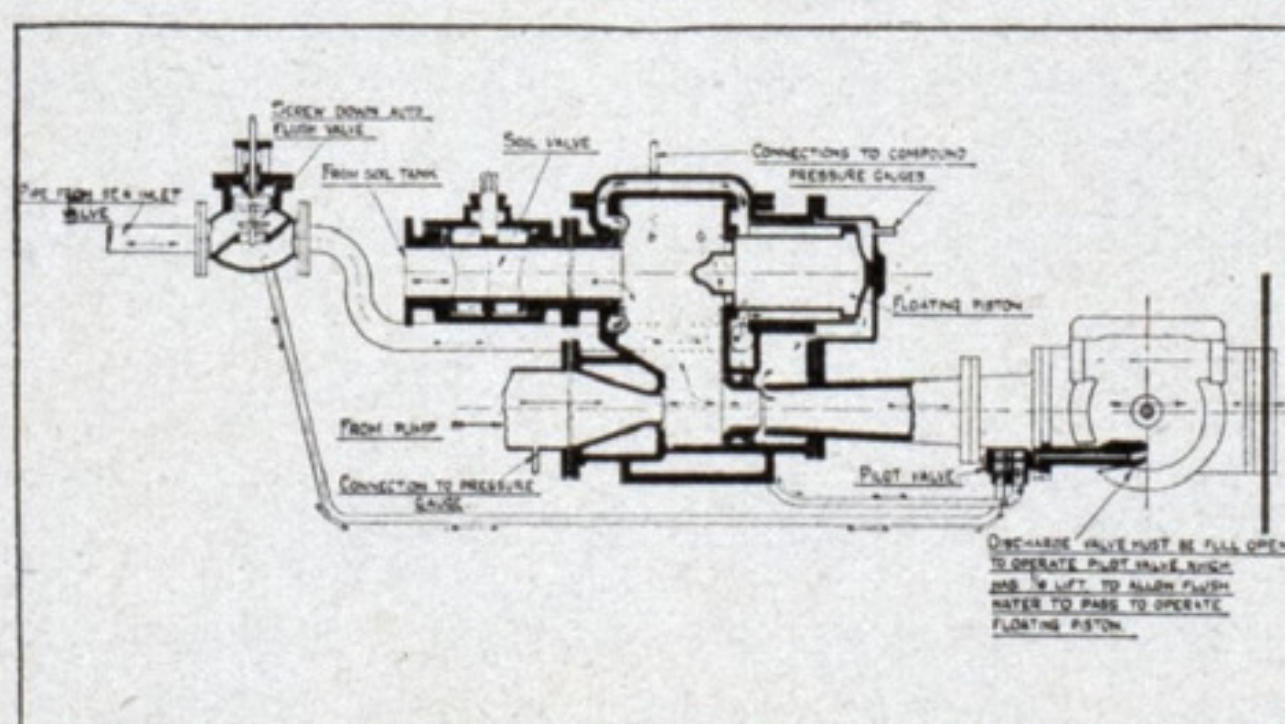
## Automatic Sewage Expeller

AMONG the marine specialties devised and perfected by J. Stone & Co. Ltd., Deptford, England, and

now available to American shipowners direct from the American Locomotive Co., New York, is the Monoflow expeller, specially constructed for the expulsion of sewage.

This expeller, shown in the accompanying diagram, may be fitted at any convenient place below the waterline in any watertight compartment of a ship and is similar to an ash expeller. Connected to the expeller is an electrically-driven pump which provides the necessary power water. This pump draws from the sea and forces the sea water through the expeller, thereby setting up a high degree of vacuum in the main body of the expeller. The collector tank is so connected that owing to the vacuum mentioned the sewage is sucked in and absorbed by the stream from the pump and discharged clear of the ship under the waterline. The sewage does not pass through any pump and it is impossible for seawater or any backflow to enter the sewage or sanitary pipes. The pump deals only with seawater which it turns into pressure water for setting up suction.

Operation of the expeller is entirely automatic, the floating piston being controlled by a flow through the nozzle, and can only remain open as long as the expeller is efficiently discharg-



Diagrammatic Section of Monoflow Sewage Expeller

ing. The moment the pump stops and the flow ceases, the pressure of the sea closes the automatic floating piston and cuts off the communication from the sea to the tank.

## New Signal Apparatus Undergoes Tests

SEVERAL practical demonstrations of the Janus broadcasting system given recently aboard vessels on the Pacific coast, prove the usefulness of this apparatus in avoiding collisions.

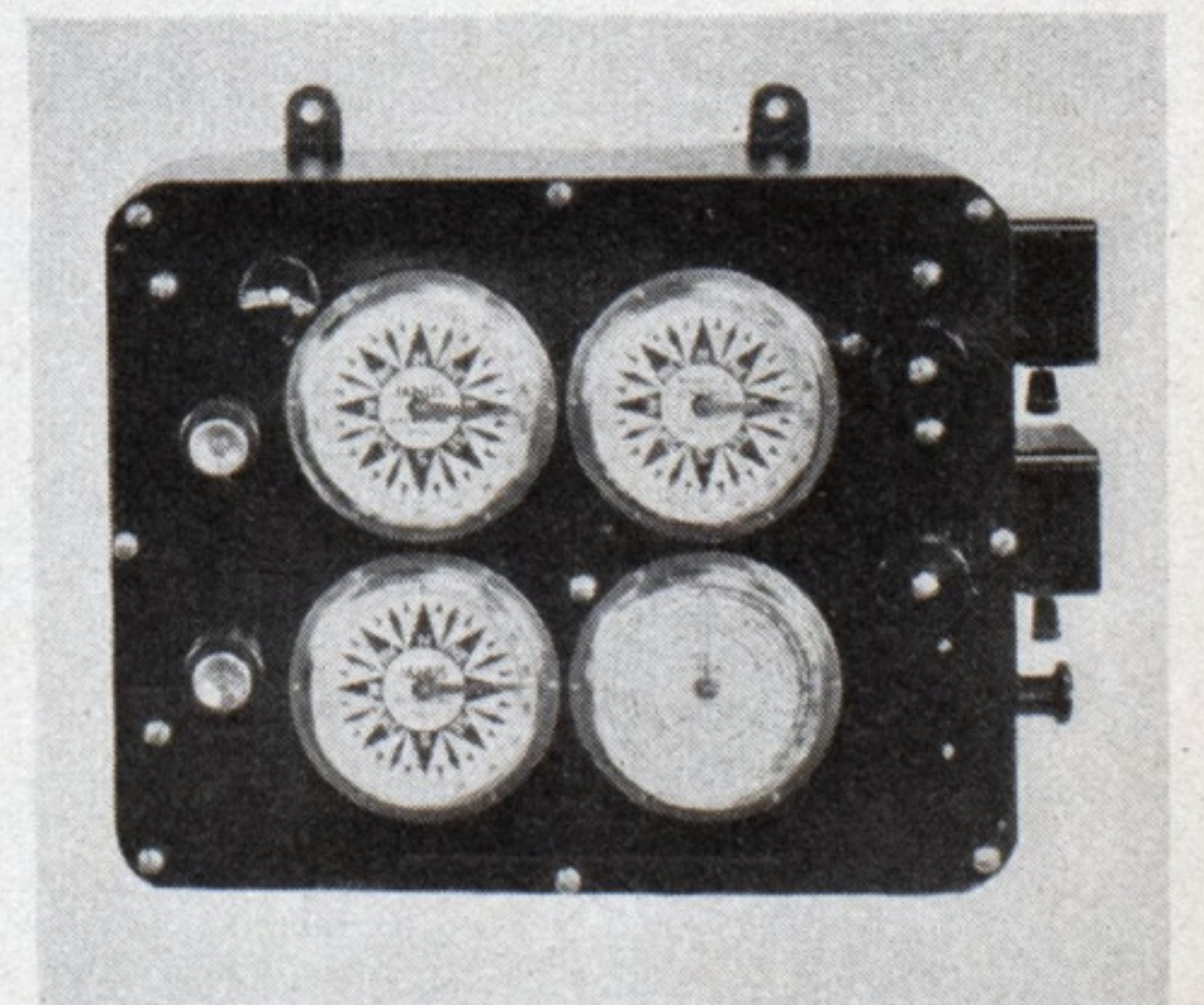
This system gives the navigating officer of a vessel the course of an approaching vessel in relation to his own

course. The approximate bearing of another vessel can be ascertained by ear but the direction in which the other vessel is traveling is of the greatest importance. With the Janus apparatus this information is given with great accuracy, most of the signals giving the exact course of the other vessel, none being more than one point off.

In making tests, two vessels steamed in a quadrangular course in opposite directions, being one to two miles distant. Several signals were given and received by each on the various courses. These signals were instantly transmitted by the receiver. Tests on Puget Sound proved that a ship equipped with the apparatus can automatically broadcast its course.

There are three units in the mechanism, a two-tone whistle, a broadcasting and receiving apparatus with three dials and a geared motor to control the whistle. The course of an approaching vessel is automatically determined by measuring the intervals between two blasts from that ship. The system whistle is two-toned so that it will not be confused with the ordinary automatic signal.

Four outstanding advantages claimed for the Janus system are that it complies with the law requiring signals in fog; the signal goes from one pilot house to another without possibility of being garbled in transmission; the message is transmitted instantaneously and continuously and, because of the limited range of the whistle, there is less possibility of confusion in receiving several signals at the same time. Captain Robert Kamdron, Seattle, and Capt. G. Stavrov, Victoria, B. C., are the inventors. The Janus Mfg. Co. is located at 406 Lowman Bldg., Seattle.



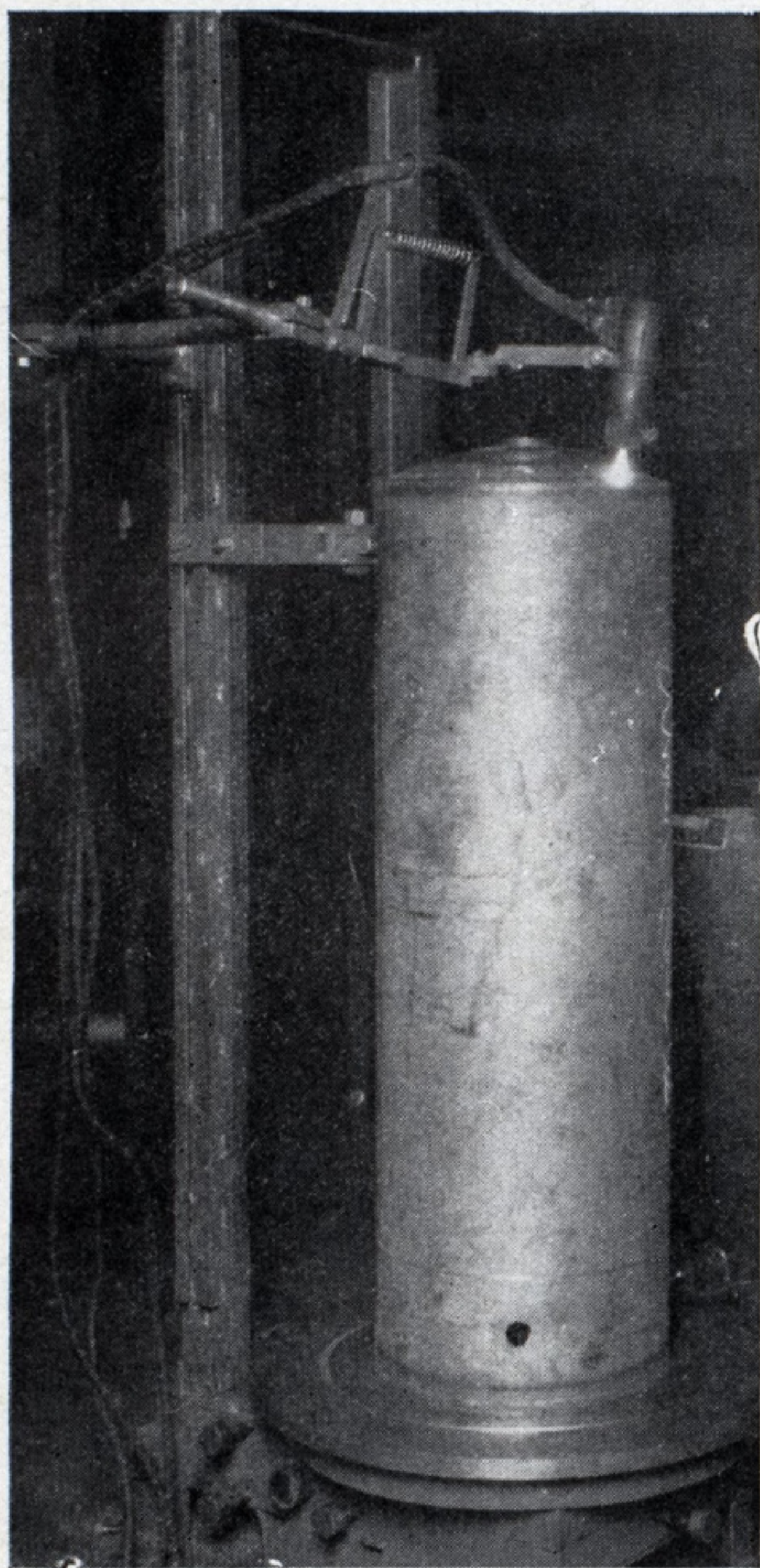
Broadcasting and Receiving Apparatus of the Janus System. A Whistle and Geared Motor to Control the Whistle Also Are Included



## Automatic Arc Welder Has Variable Speed Motor

An automatic arc welder for welding the head in small tanks, such as range boilers, oil and gas tanks, etc., utilizing the electronic tornado principle is illustrated in the accompanying cut. This piece of new equipment has been produced by the Lincoln Electric Co., Cleveland.

This machine is characterized by its extreme simplicity. The holding fixture consists of a rotating table driven by a small variable speed mo-



*Automatic Arc Welder*

tor and a vertical support carrying a fixed steady rest and the welding head.

The electronic tornado welding head is flexibly mounted so that the length of the arc is at all times under the control of the operator. The chief advantages claimed for this machine are high-welding speeds and smooth uniform welding speeds.

In making an edge weld as illustrated in the photograph, no additional filler metal is used. The heat of the carbon arc fuses the edges of the cylinder shell with the flange of the dished head making a leak-proof joint.

Welding speeds of 100 to 150 lineal feet per hour are claimed for this machine. The framework of the machine itself is constructed entirely from welded steel. This type

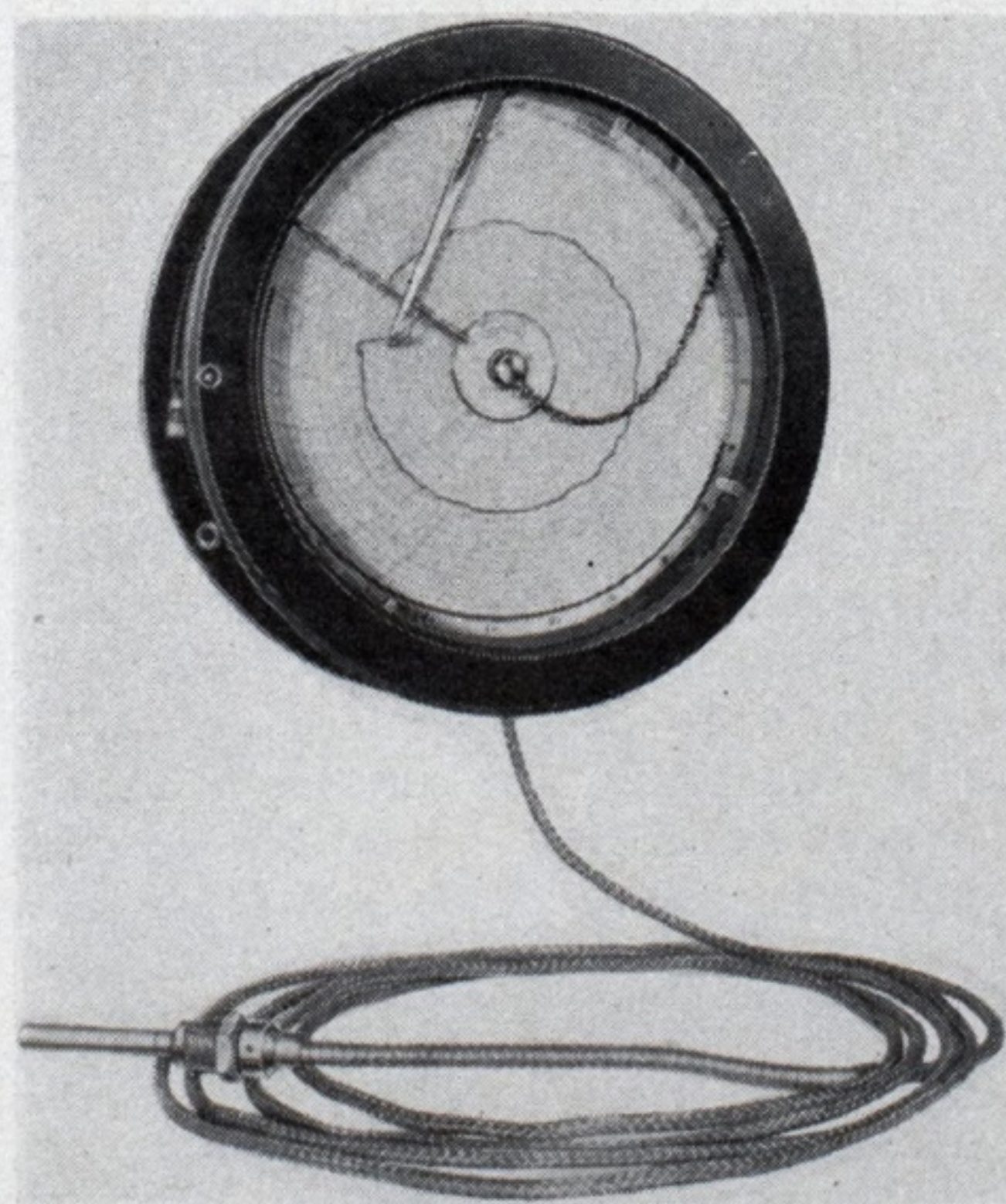
of construction has been used for a number of years by the company in their standard line of motors and welders and was followed in bringing out a new line. This machine is but one of the many applications of the electronic tornado principle developed by the Lincoln research laboratories and announced several months ago.

## Wide Charting Range in Recording Thermometer

A recording thermometer capable of charting temperatures from minus 40 to plus 750 degrees Fahr. has been perfected by the Moto Meter Gauge & Equipment Corp. of Long Island City, N. Y. The instrument, developed after several years of experimentation, is known as the Model 1000 Motoco recording thermometer.

In design, the instrument consists of a dust, fume and moisture proof housing which encloses the working parts. The element is comprised of a bulb, capillary tube and Bourdon tube, filled solidly with a special liquid which has an equal coefficient of expansion over the entire scale range. When the bulb is subjected to heat or cold, the liquid content therein expands or contracts and this action is transmitted through the capillary tubing to the Bourdon tube, causing the latter to wind or unwind and move a pen across the face of a chart actuated by a 24 or a 7-hour clock mechanism.

The ratio between the pressure of the liquid and the movement of the pen is one-to-one so that levers, hair springs, screws, gears and other delicate parts are eliminated. A compensating spring takes up any difference between the bulb and room temperature and automatically resets the pen at the point on the chart corresponding with the bulb temperature.

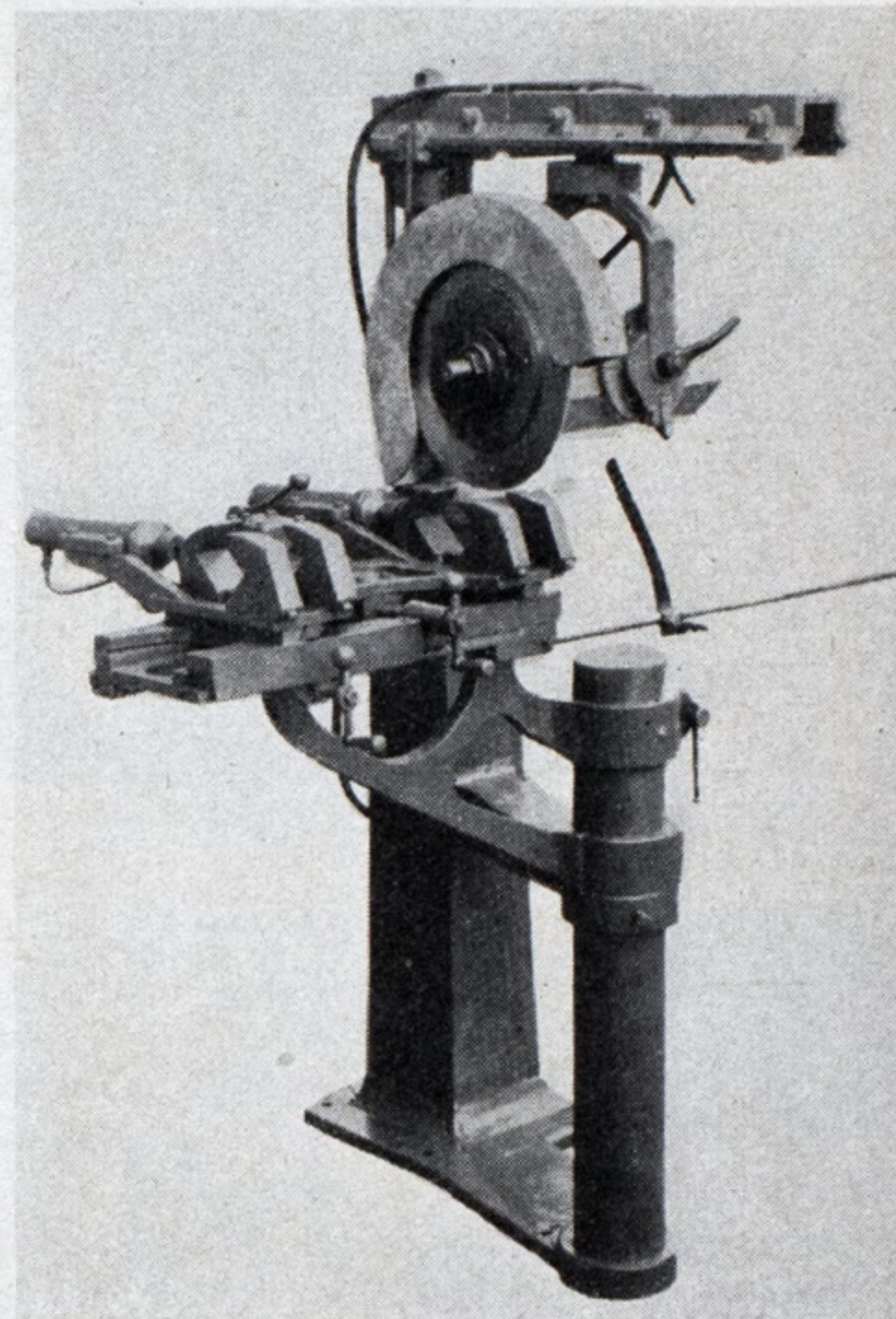


*New Recording Thermometer Charts Temperature from 40 Minus to 750 Degrees Plus Fahr.*

## Adjustable Circular Saw Is Motor Driven

Suitable for use in the marine field in operations of cutting seamless steel tubing and forged metal where speed and a smooth cut are desirable, a circular saw has been produced by the De-Walt Products Corp., Leola, Pa.

The device as shown in the accompanying illustration consists of a circular 12-inch hollow ground metal cutting saw driven by a 5-horsepower overhead direct drive. The saw is



*Circular Saw for Hard Steel*

adjustable to any angle and will handle tubing up to 3 inches in diameter and  $\frac{1}{8}$ -inch wall thickness. Operating speed is 3600 revolutions per minute.

The saw blade is said to give 3 to 4 days continuous service in cutting molybdenum steel before resharpening is necessary. Eight to 10 days is the service time claimed for the saw when low carbon steel is being cut. For holding the work an air grip vise has been incorporated in the machine. This vise operates on 30 to 150 pound air pressure and the jaws are adjustable to handle tubing up to 3 inches in diameter.

The cutter first was developed to meet the needs of the airplane industry in making the many angle cuts necessary in fuselage construction. This material was mainly molybdenum steel, one of the hardest alloy steels.

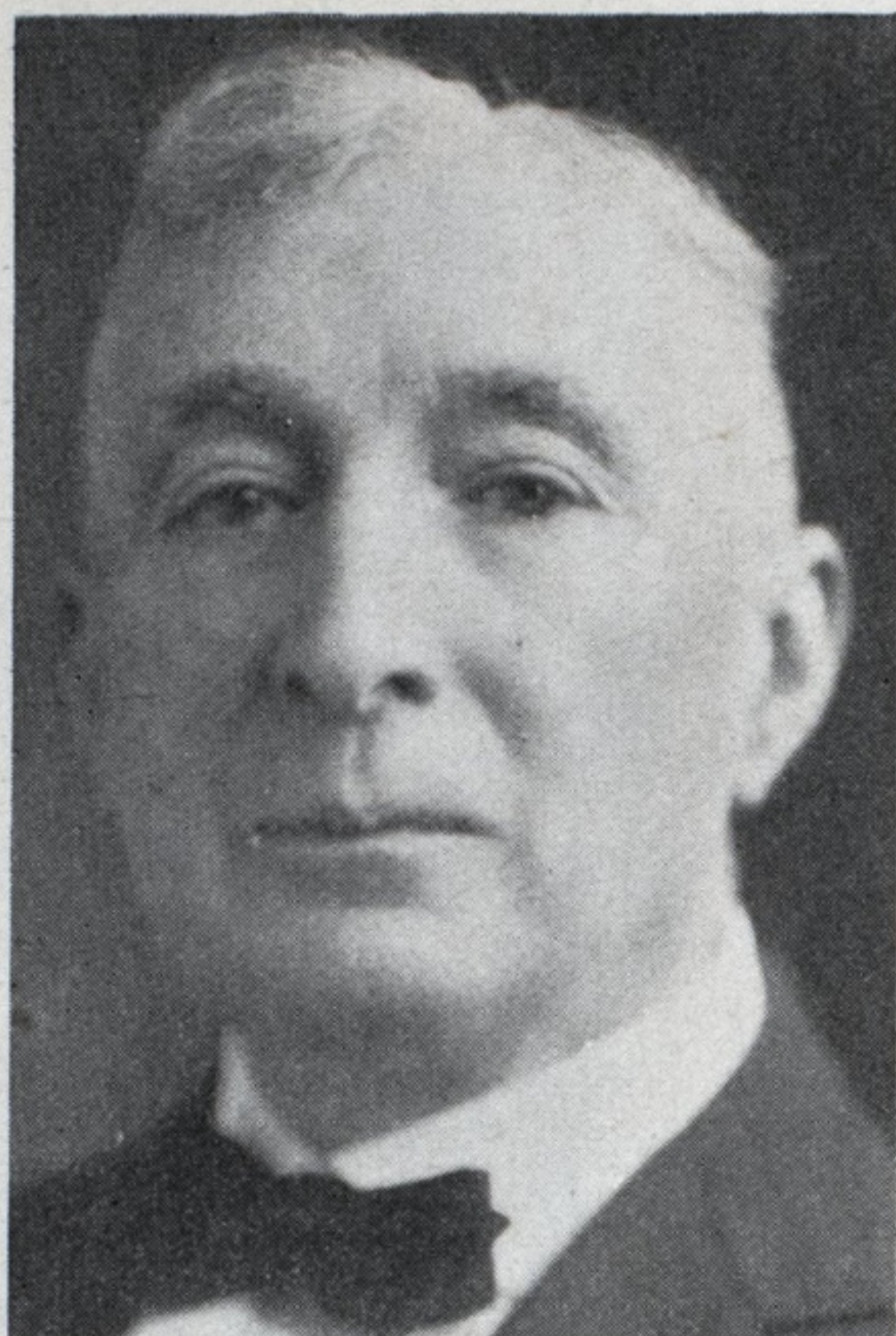
Two Dutch tugs in 166 days traveled 13,500 miles, from England to New Zealand, towing a floating dry dock which, because of its size, was launched in three sections. This is believed the longest tow on record.



# Personal Sketches of Marine Men

Capt. Alby O. Ackard, Superintendent, Carnegie Steel Co.'s River Fleet

By W. G. Gude



HE HAS the distinction of being the first man, as far as known, to be appointed commodore of a fleet of commercial river craft.

THE fleet of which he has charge, in normal times, carries annually from ten to fifteen million tons of various products.

EXTENSIVE improvement in the waterways used by his fleet has greatly increased the efficiency and regularity of river traffic.

**C**APT. ALBY O. ACKARD—as he is generally known on the Monongahela, Ohio and Mississippi rivers—but Commodore Ackard—to give him his official title—as superintendent of river transportation for the Carnegie Steel Co., Pittsburgh, directs the activities of the huge fleet of river craft regularly engaged in the movement of raw and finished products to and from the various plants of the United States Steel Corp. in the Pittsburgh district. This is the largest fleet operating on inland rivers.

The title of commodore was conferred on Captain Ackard several years ago by James A. Farrell, president of the United States Steel Corp., at one of the annual dinners of the Carnegie Steel Co. in Pittsburgh. On that occasion Mr. Farrell called attention to the fact that in deep sea traffic when a fleet has more than ten vessels it is customary to have it commanded by a commodore and, that as Captain Ackard's fleet then numbered 14 steamers he was entitled to the office of commodore, and said, "I so constitute you commodore of the Carnegie fleet." At the same time the steamer W. G. CLYDE was designated as the flagship of the Carnegie fleet and a commodore's flag, designed by Mr. Farrell, was presented to Captain Ackard. This is probably the only time this honor has been conferred on an inland navigator.

For two-score years, Captain Ackard has witnessed tremendous developments in water traffic and transportation facilities. The amount of coal and various iron and steel products handled recently by the Carnegie fleet alone represents more than twice the tonnage of all products shipped by all river carriers in the Pittsburgh district at the time when Captain Ackard entered river service.

He was born in November, 1866, in Pittsburgh, and found his first employment on the rivers as fireman on the old steamer MONTEREY, a harbor boat owned by A. J. Golden and Ross Miller of Pittsburgh. A short time later Captain Ackard joined W. H. Brown Sons as a deck hand. This organization operated 18 boats out of Pittsburgh, traveling as far as New Orleans and at one time was the only regular shipper to Memphis. Captain

Ackard remained in its service for 20 years. During this period and the six years he served as captain of the MONITOR of the Diamond Coal Co. Captain Ackard gained a broad experience in river shipping.

He joined the Carnegie organization in June, 1917 as captain of the steamer DUQUESNE. This was about the time when the river transportation service of the Carnegie company was organized. In February, 1919, Captain Ackard was made general superintendent of river transportation and has continued in that capacity since then.

A few years ago the floating equipment of the American Steel & Wire Co. was taken over by the Carnegie river transportation department, with Captain Ackard in charge of the combined group which now operates 15 steamers and 440 barges having a total carrying capacity of more than 300,000 tons, providing service for the various subsidiary companies of the United States Steel Corp. In normal times this fleet annually transports 10,000,000 to 15,000,000 tons of various products on the three rivers.

Captain Ackard makes his headquarters at the Carnegie marine ways 18 miles up the Monongahela river near Clairton, Pa., where he is in close contact with his fleet. Down-stream from the ways is the 1000-mile route of the Monongahela and Ohio rivers leading to the Mississippi and the additional 1000 miles to New Orleans over which the Carnegie tows regularly ply. Conditions have changed greatly since the days when Captain Ackard handled the wheel of a river steamer. He recalls the time when for more than six months he was forced to tie up his boat away from port because the stage of water between Pittsburgh and Wheeling was only four feet. Formerly a tow departed when a satisfactory stage developed; today with the Ohio canalized to a depth of nine feet its entire length a tow starts southward when it is ready. Even the severe drought of 1930 failed to halt transportation.

In December, 1922, the Carnegie fleet began the long haul movement of finished steel products to Ohio and Mississippi river points as far south as New Orleans, and regular service since has been maintained.

A keen, active man Captain Ackard has won a prominent position for himself in the history of river transportation and is one of the best known individuals on inland waters.



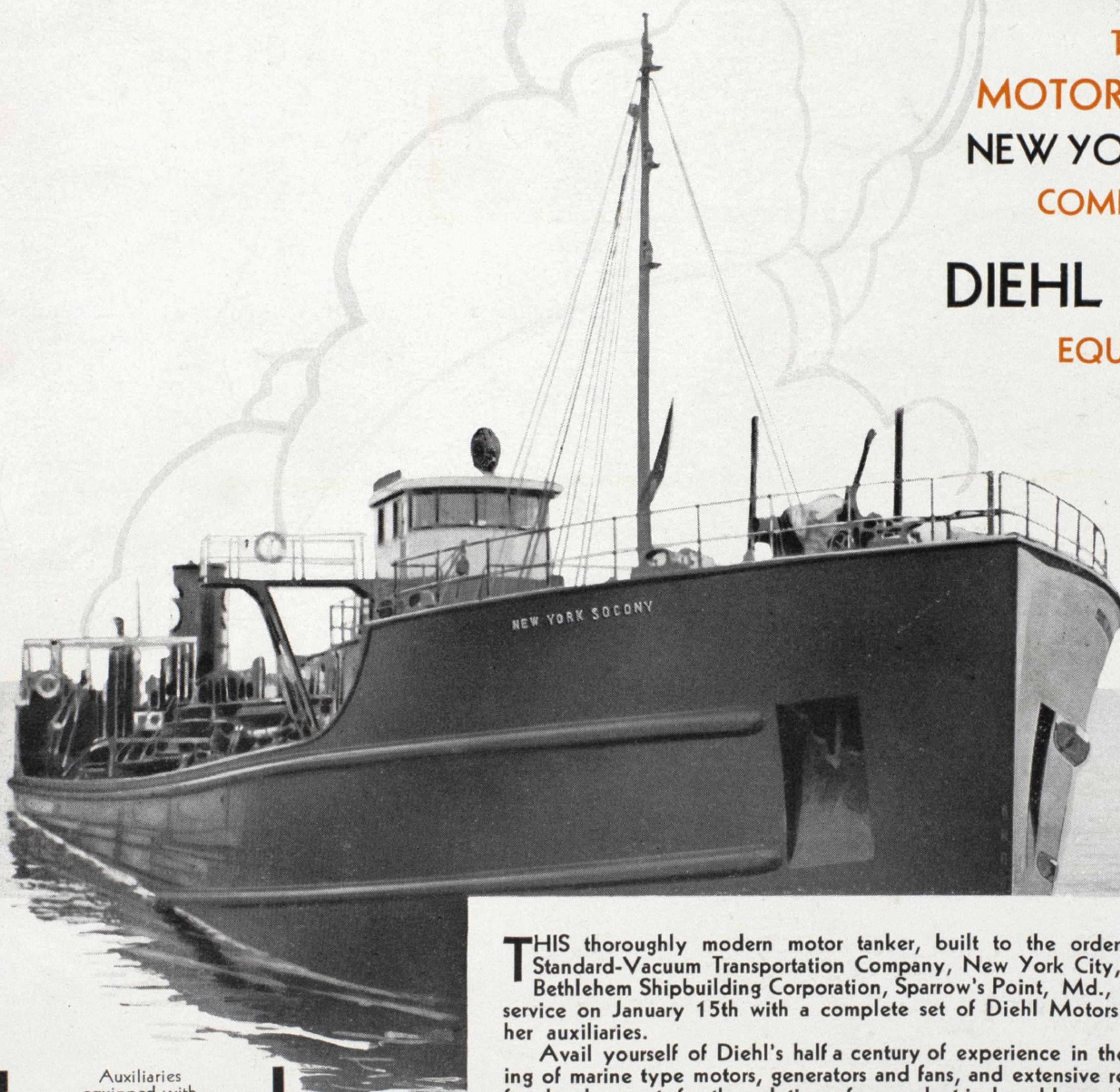
# Marine Review

Reg.  
U.S.  
Pat.  
Off.

*The National Publication Covering the Business of  
Transportation by Water*

**March, 1932**

THE  
MOTOR TANKER  
NEW YORK SOCONY  
COMPLETELY  
DIEHL MOTOR  
EQUIPPED



**T**HIS thoroughly modern motor tanker, built to the order of the Standard-Vacuum Transportation Company, New York City, by the Bethlehem Shipbuilding Corporation, Sparrow's Point, Md., entered service on January 15th with a complete set of Diehl Motors driving her auxiliaries.

Avail yourself of Diehl's half a century of experience in the building of marine type motors, generators and fans, and extensive resources for development, for the solution of your electrical problems. We will be glad to study requirements and submit recommendations, without obligation.

Auxiliaries  
equipped with  
**DIEHL MOTORS**  
and  
CUTLER-HAMMER CONTROL  
include:  
WORTHINGTON  
Air Compressor  
WINTON DIESEL  
40 KW Generating Sets  
HILL DIESEL  
10 KW Generating Sets  
AMERICAN ENGINEERING  
Steering Gear, Capstan  
and Windlass  
NASH Pumps  
NORTHERN Pumps  
SHARPLES  
Oil Separator  
also  
**DIEHL**  
Fans and Blowers  
and  
Lighting Motor Generator Sets

**DIEHL MANUFACTURING COMPANY**

*Electrical Division of*

**THE SINGER MANUFACTURING COMPANY**

*Elizabethport, N. J.*

Atlanta

Boston

Chicago

New York

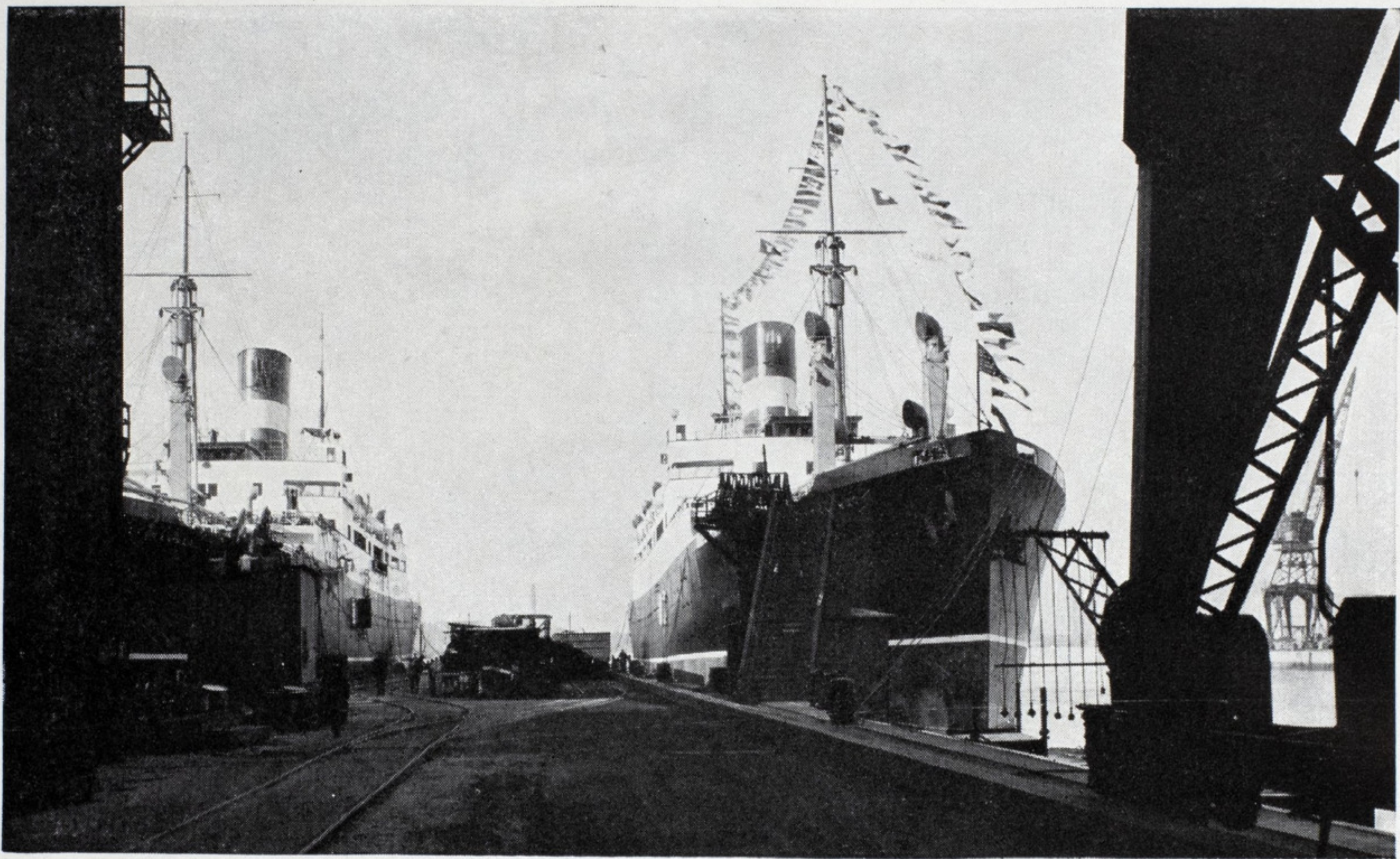
Philadelphia

# DIEHL



# TRANSLATE YOUR DESIRES INTO ACTION!

Out of Thirty Million Men in this Country about Twenty-nine Million,  
Nine Hundred and Ninety Thousand Want a Return of Prosperity



Built by New York Shipbuilding Company  
Passenger-cargo Ships EXCALIBUR and EXOCHORDA of the Export Line

**S**HIPS work for their own country just as railroads work for their terminal ports. Increasing PATRONAGE of American vessels will protect and increase our foreign trade, create employment and consumption, and pay dividends in PROSPERITY which it would be hard to overvalue.

*Do You Ship and Travel on American Vessels?  
Do Your Actions Fit Four-Square  
With Your Desires?*

## **NEW YORK SHIPBUILDING COMPANY**

Main Office and Yard:  
Camden, N. J.

New York Office:  
420 Lexington Avenue



# Still MORE BATTERY FOR YOUR MONEY

*Average life of Exide-Ironclad  
Batteries again increases, reflecting  
their consistent development*

**F**IFTY per cent greater life—that's the average increase that users of Exide-Ironclad Batteries received in 1931 over 1923.

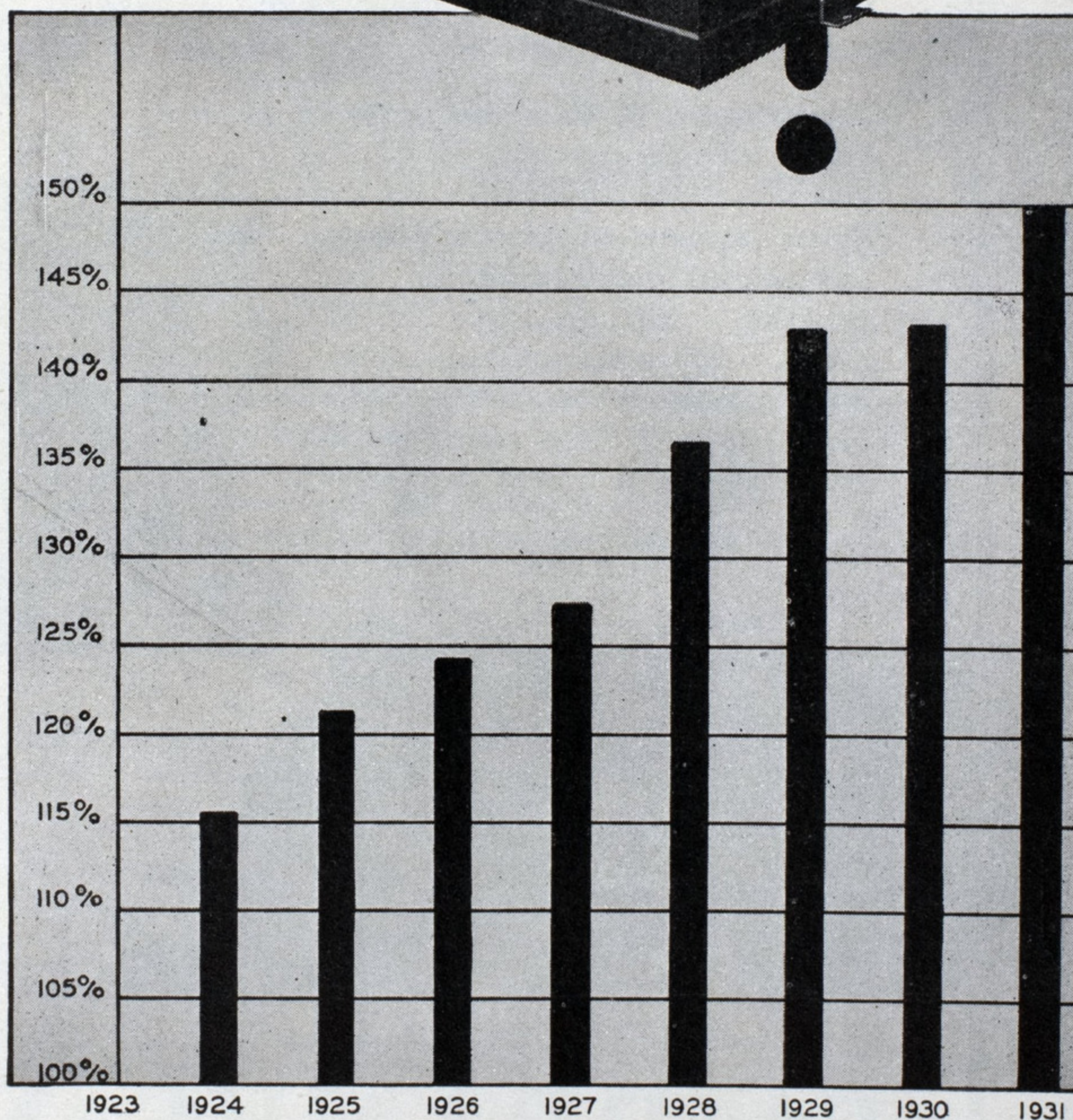
Constant improvements in design and construction have made this gratifying increase possible. Not only has the life been increased, but the price has been reduced, resulting in still greater value per dollar of battery investment.

The use of Exide-Ironclad Batteries insures more than long life alone; it means the best possible service for all classes of motive power vehicles—good speed throughout the day, low charging cost and low maintenance.

If you are not using Exide-Ironclad Batteries and do not know from actual experience how efficiently and economically they can serve you, try one the first time you have need of a battery. Their stamina, long life and economy of operation will surprise you.

**Exide**  
**IRONCLAD**  
**BATTERIES**

*A typical Exide-Ironclad Battery for industrial electrics. High voltage, power flexibility, economy and long life are features of these rugged batteries.*



*Chart shows increase in average life of Exide-Ironclad Industrial Truck Batteries on basis of actual service records. Life has gone up—price has come down.*

**THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia**  
**THE WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE**

*Exide Batteries of Canada, Limited, Toronto*



# Consider F-M Diesel Simplicity when choosing *marine* power

You can expect increased dependability, lower maintenance expense and less operating attention when a Fairbanks-Morse Diesel engine powers your craft.

Here's the reason. The simplicity in design of these F-M Diesels reduces maintenance to a minimum. The fewer the parts, the less to get out of order. Compare the two-cycle, airless injection F-M Diesel with engines of more complicated design. See for yourself how this simple construction eliminates a large number of moving parts.

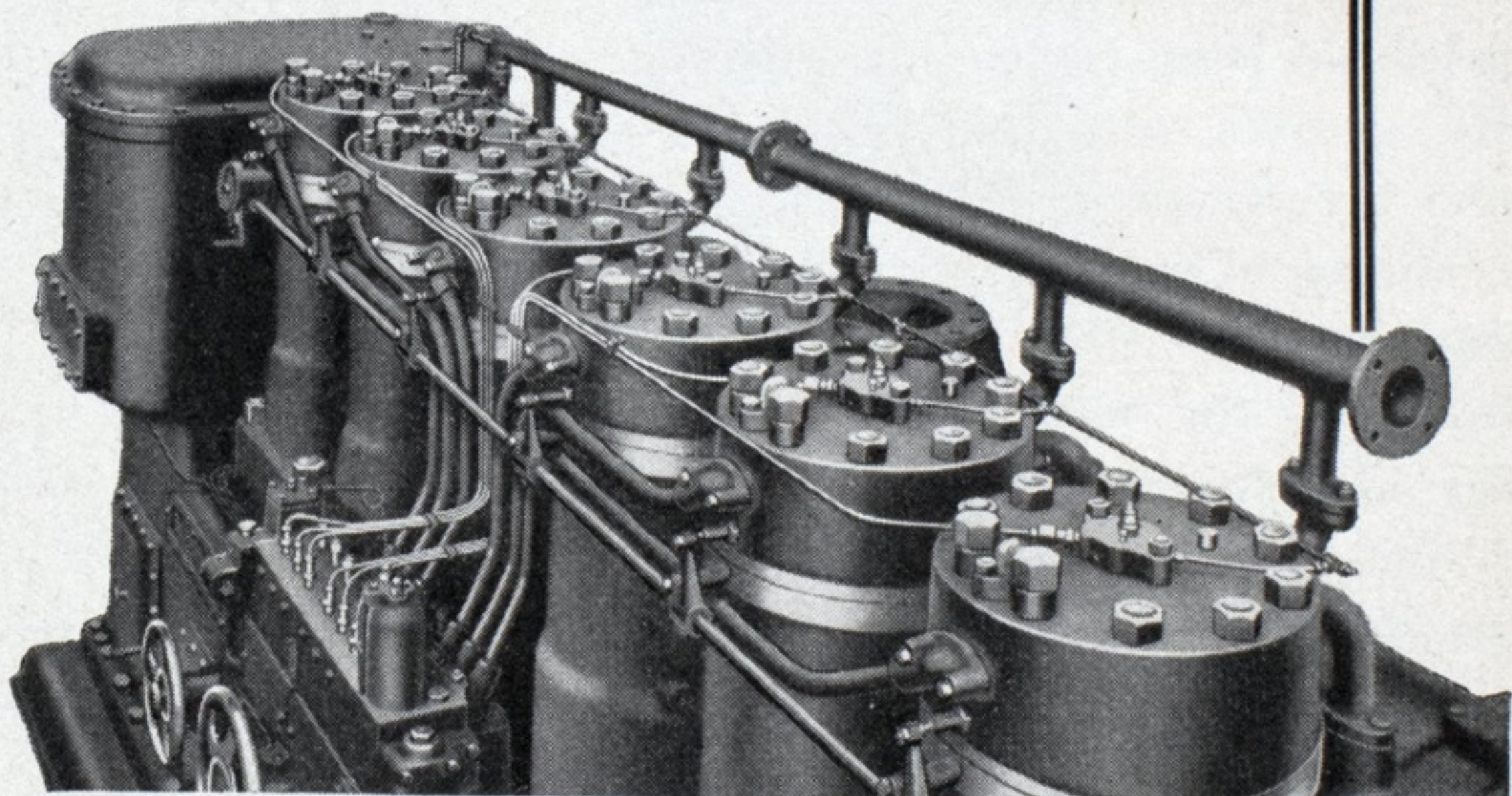
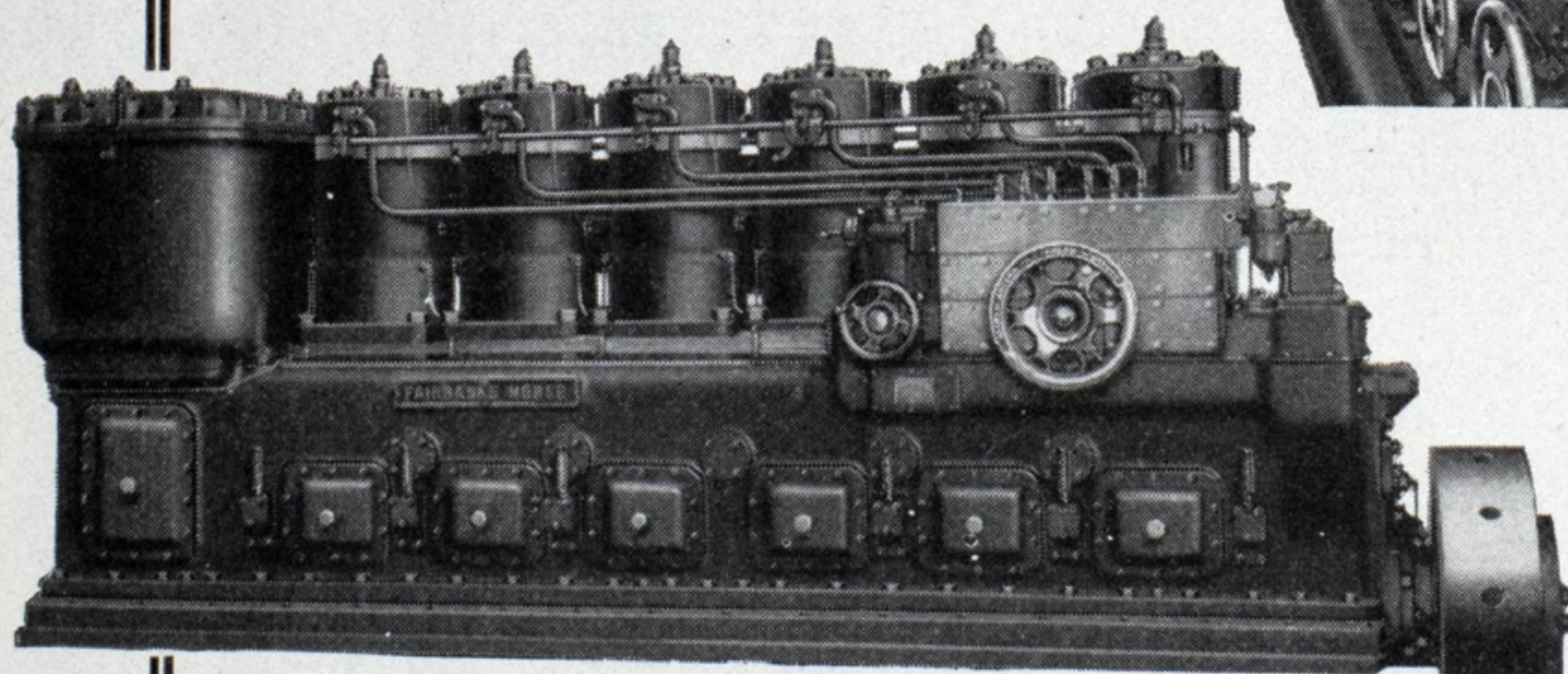
For instance, air inlet and exhaust valves with the attendant lay shafts and cams are eliminated. The airless injection of fuel requires no complicated, high pressure air compressors. Because there are no complicated parts requiring adjustment, attendance costs are at a minimum. Best of all evidence of the advantages of Fairbanks-Morse sim-

plicity is found in the operating records of thousands of F-M Diesels in service on land and water. You place yourself under no obligation by inviting F-M engineers to present the facts about Fairbanks-Morse two-cycle, airless injection Diesel engines as they apply to your marine power problems. Or, if you prefer, interesting literature will be mailed upon request.

## FAIRBANKS, MORSE & CO.

New York      Boston      Baltimore  
160 Varick Street   88 High Street   115 East Lombard Street  
New Orleans: 100 St. Charles Street  
Jacksonville: 630 West Bay Street  
General offices: Chicago

*Branches with Service Stations in Principal Ports*



This view of the top of an F-M Diesel engine illustrates the simplicity of construction resulting from the two-cycle principle.



Six-cylinder Model 37 pump scavenging F-M Marine Diesel of the direct reversible type. Sizes—250 to 1400 hp.

# FAIRBANKS-MORSE diesel engines

**8 TO 1400 HORSEPOWER**

5614-OA 27.388







# *Distinctive Ships* **COMING!**

**April Number of Marine Review**  
*Featuring American Shipbuilding Progress*

**Plan Your Advertising Now**

Make sure your advertisement appears in the April Distinctive Ship issue of MARINE REVIEW, where it will be seen by marine men responsible for ship design, ship operation, and shipbuilding.

## **Distinctive Ship Section** **Annual Feature**

Ship owners, operators, shipbuilders, naval architects and marine engineers find the Distinctive Ship Number of Marine Review of greatest usefulness, because it gives them in one place, under one cover, the most definite and accurate information on every type of ship recently completed. The following quotations from letters received demonstrate the practical value of this issue.

***Shipyard Vice president:***

"The information contained in your April Distinctive Ship issue and manner of presentation are very remarkable and useful."

***Prominent steamship manager:***

"Your Distinctive Ship issue showing various types of vessels with concise descriptions we consider particularly useful as a reference volume."

***New York marine engineer:***

"I think the section devoted to Distinctive Ships of special interest and valuably informative."


***Prominent naval architect:***

"The Distinctive Ship issue is most interesting and valuable to every one interested in American shipping and especially as a reference for those directly connected with shipbuilding."

This important and exclusive presentation of up-to-date American shipbuilding data is of unusual interest to every responsible person connected with the marine trade.

All the Distinctive Ships and shipbuilding information is grouped in an insert section printed on high quality india tint coated paper. Duotone ink is used, giving a rotogravure effect. The attention value of your advertisement appearing in this insert section is apparent. Many concerns each year take advantage of this outstanding opportunity to tell about their products and service in an effective way. Only full pages appear in the insert section. Early reservation of space is suggested, copy to reach us on or before March 21. The Distinctive Ship Number is out on April 1.

# Marine Review



220 Broadway  
New York City

Penton Building  
Cleveland, Ohio



# Will *my* ships be ready when the business jam breaks?

*Ask yourself these questions  
and answer them to yourself*

**B**ECAUSE business has been like shipping in an ice-locked harbor, have I given up hopes of a thaw?

Am I failing to reckon with the mighty forces at work in America to break this "jam"?

Have I looked so long at "present conditions" that my outlook on the future is clouded? When business does come, will I be able to take care of it?

In other words, am I putting off necessary improvements—delaying repairs that are vital—overlooking the ultimate profit in having this work done now—simply because I can't see ahead?

Is it possible that I know that certain ship repairs and improvements should be made but I've reached the point where I'll just wait and see what hap-

pens before I go ahead?

What is it that I am waiting for?

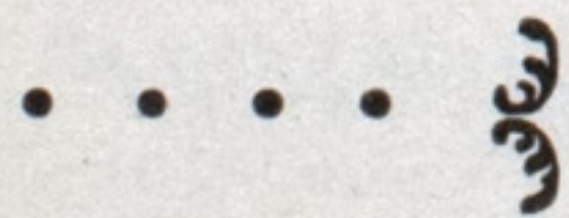
Is it cheaper materials? Is it cheaper labor? Is it more efficient work? Is it customers to crowd me into action?

Is it that I "don't know just how long this depression is going to last" and I feel safer with things "as is"? Is it that I feel at least no one can criticize me for *not* spending money now? Are others waiting for me? And am I in a vicious circle of waiting? Will my shippers be "waiting for ships that never come in"?

Do I really believe that business is coming back? Or do I think it has vanished forever around the corner?

Will my ships be ready—when the business "jam" breaks and the flood of business starts? Am I waiting or acting?

## The AMERICAN SHIP BUILDING CO.



CLEVELAND  
American Ship  
Building Co.

LORAIN  
American Ship  
Building Co.

BUFFALO  
Buffalo Dry Dock  
Company

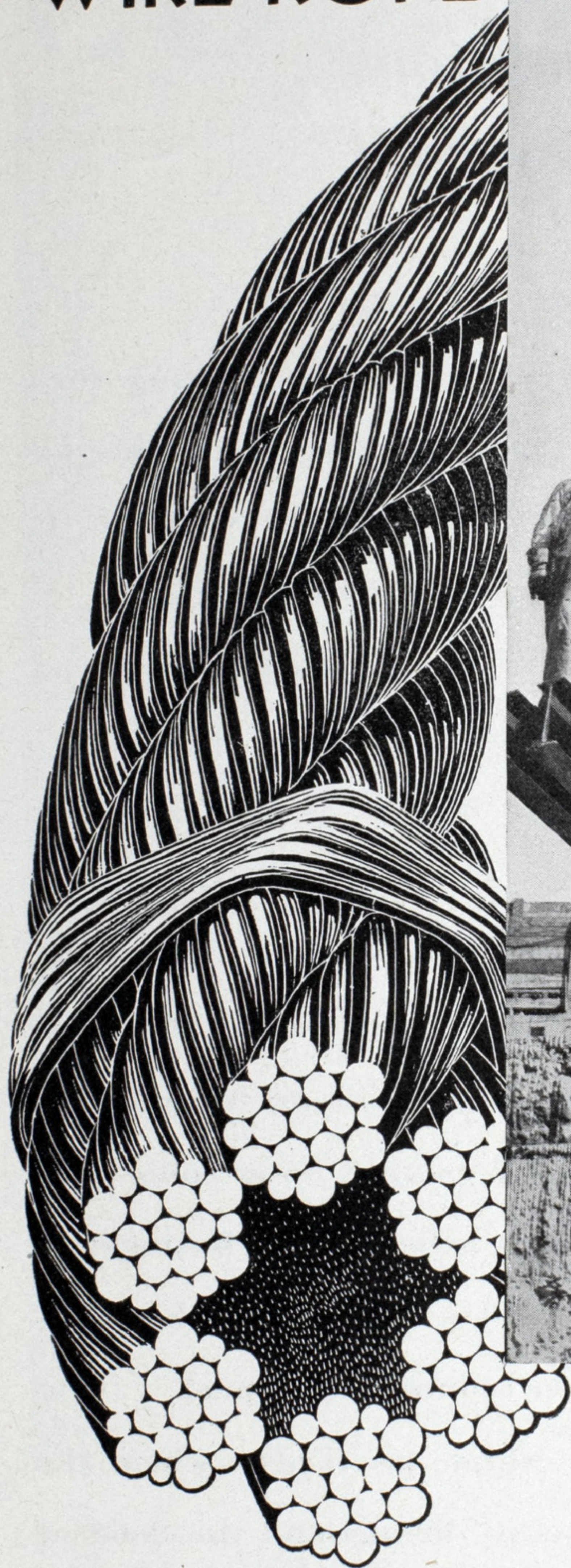
SOUTH CHICAGO  
Chicago Ship  
Building Co.

SUPERIOR  
Superior Ship-  
building Co.





# All WIRE ROPE



... has grave  
responsibilities

Wire rope *must* be a quality product; for in practically every wire rope installation, human life, property and money are in constant jeopardy. It is to guard against such damages that Wickwire Spencer Wire Rope Engineers are stern dictators of the methods and materials employed in rope manufacture. It is to insure the confidence of the user that they make exhaustive chemical, physical and micro-photographic tests of every wire that goes into every Wickwire Spencer Wire Rope. Samples of finished rope are taken at regular and frequent intervals, and torn asunder in gigantic testing machines, to prove the strength and quality beyond a shadow of a doubt. This fidelity in manufacture and testing produces wire rope that not only equals but exceeds the requirements of usual standards, and adds a durability that makes Wickwire Spencer Wire Rope an economical rope to use.

**Wickwire Spencer Steel Company**  
41 East 42nd Street, New York City; Buffalo;  
Chicago; Detroit; Philadelphia; Worcester;  
Tulsa, 314 E. Archer Street; Pacific Coast  
Headquarters: San Francisco; Branches and  
Warehouses: Los Angeles, Portland, Seattle.  
Export Sales Department, New York City

Send for our book. It is free  
and will prove of great value.

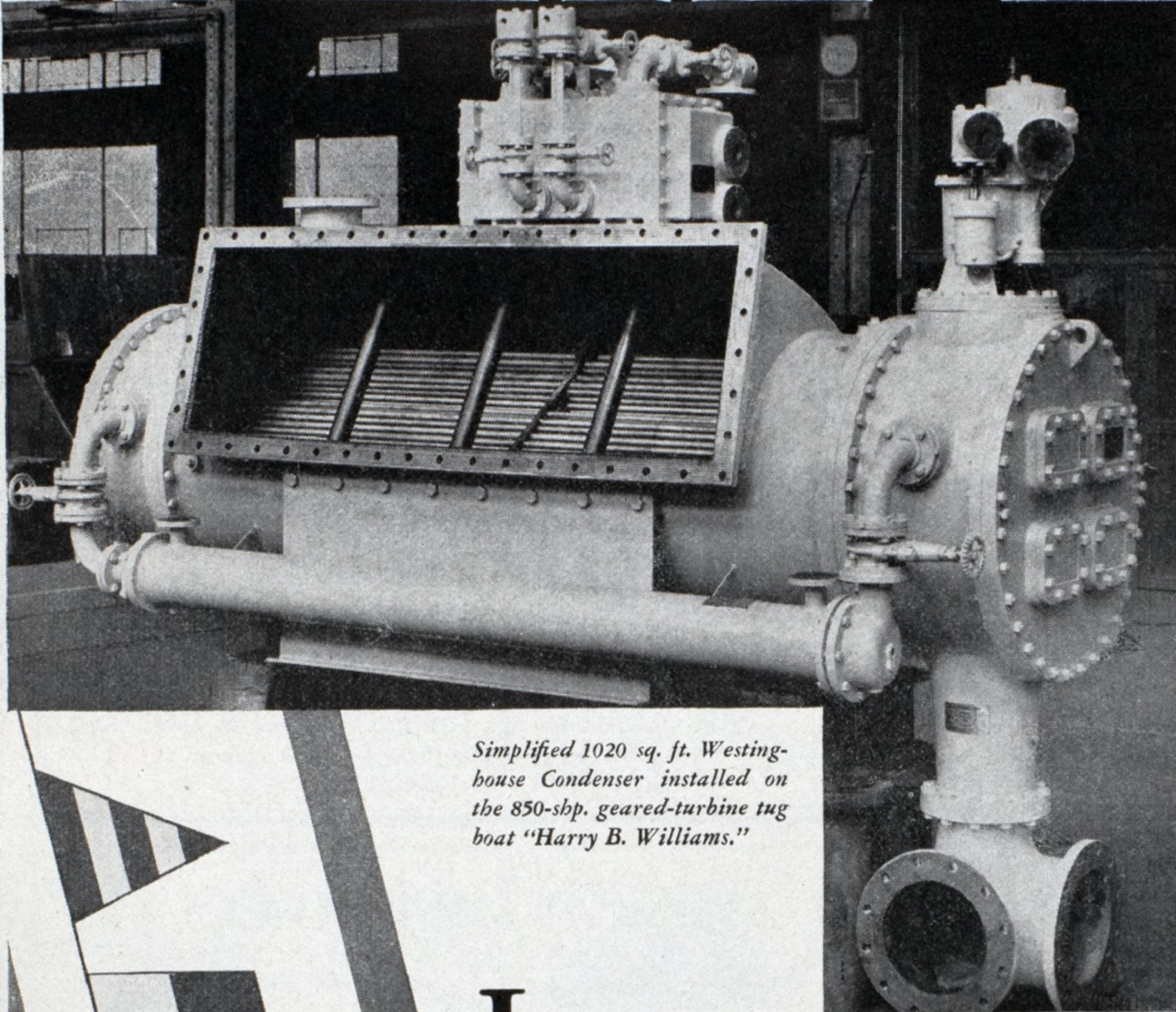


# WIRE ROPE

*by Wickwire Spencer*



# SAVE...



*Simplified 1020 sq. ft. Westinghouse Condenser installed on the 850-shp. geared-turbine tug boat "Harry B. Williams."*

♦ ♦ SPACE,  
WEIGHT  
*and* COST

WITH

Simplified  
Condenser  
Design ♦ ♦ ♦

**I**N the simplified condenser designed by Westinghouse Marine Engineers for tugs, ferries, yachts, and smaller types of cargo vessels, four pieces of apparatus are combined in one—the circulating pump is integral with the water box—the air ejectors are mounted on top—the lubricating oil cooler is mounted so as to receive water from the main injection.

Flexible steel plates support the unit making an expansion joint unnecessary. Three foundations are eliminated, resulting in a less expensive supporting structure in the ship's framing.

Savings in space and weight are effected which may be devoted to useful cargo, while maintenance charges will be materially reduced.

A marine engineer from the nearest Westinghouse office will be glad to furnish complete details.

## Westinghouse

T 79013

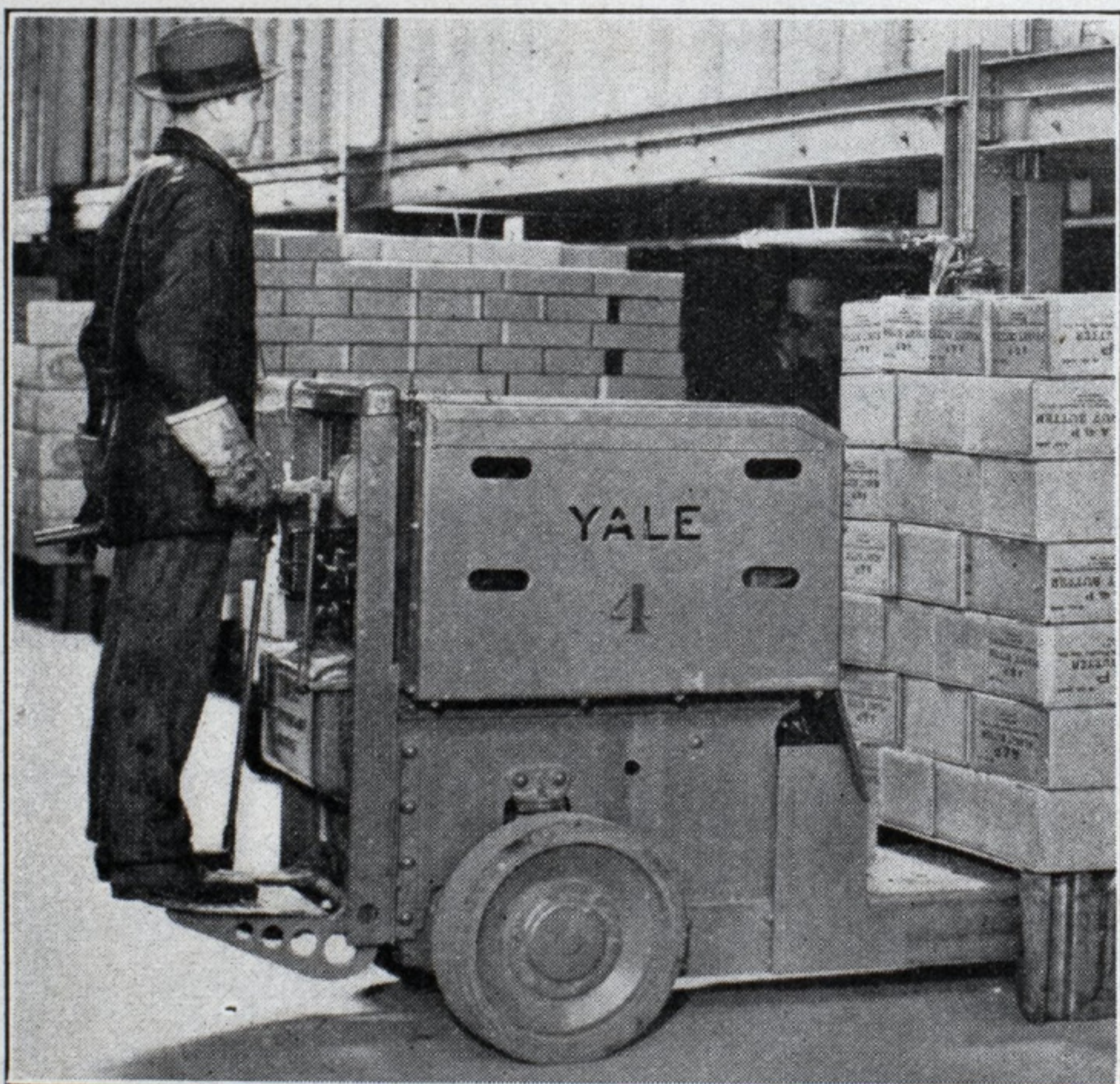
*Quality workmanship guarantees every Westinghouse product*





# 14% Return with TRADE **YALE** MARK **TRUCKS**

**Y**ALE Electric Trucks make it possible for the Capstan Glass Company to earn 14% on their investment in a new warehouse. The materials handling system in effect also includes Yale Hand Lift Trucks and Skid Platforms.



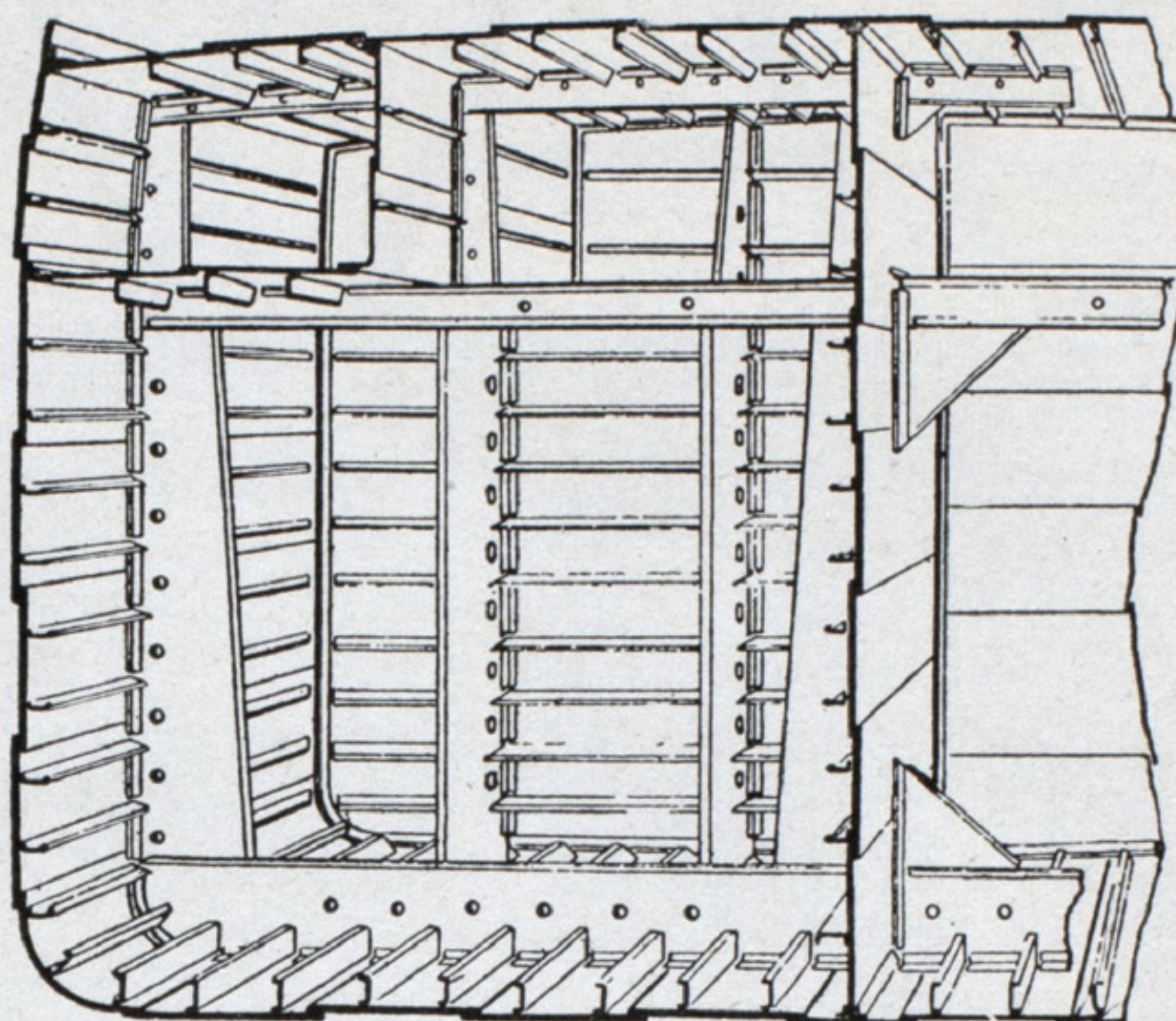
Many of the world's leading industries employ Yale Electric Industrial Trucks for the safe, efficient and economical handling of materials.

*Learn how this modern equipment can earn money for you. Address Dept. G-3*

**THE YALE & TOWNE MFG. CO.  
PHILADELPHIA DIVISION  
Philadelphia, Pa., U. S. A.**

*Makers of Yale Electric Trucks, Hand Lift Trucks, Hand Chain Hoists, Electric Hoists and Trolleys*

## Progress in Oil-Tank Ship Construction The "Bracketless-System" (PATENT)



Eliminates Bulkhead Brackets  
Eliminates Bulkhead Leakage  
Greatly Simplifies Construction  
Greatly Reduces Cost of Damage Repairs  
Greatly Reduces Cost of Cleaning Tanks  
Substantially Increases the Longitudinal Strength  
Beyond the Well-tried "Isherwood System"

Shipowners are advised to specify that plans and structural arrangements should be approved by

**SIR JOSEPH W. ISHERWOOD & CO., Ltd.**

17 BATTERY PLACE, NEW YORK  
and 4, LLOYD'S AVENUE, LONDON, E. C. 3

1



**LIFEBOATS** DAVITS  
and  
FLOATS

MARINE EQUIPMENT

**C. M. LANE LIFEBOAT CO., INC.**  
856 Humboldt St.  
Brooklyn, N. Y.



**ANDREW J. MORSE & SON, Inc.**  
221 High Street BOSTON, MASS.  
*Established 1837*

Diving Apparatus and Submarine Armor  
Fire Protection Equipment  
The Invincible Nozzle  
*Catalogues on request*

John J. Boland

Adam E. Cornelius

**BOLAND & CORNELIUS**

VESSEL OWNERS AND BROKERS  
Marine Insurance Agents

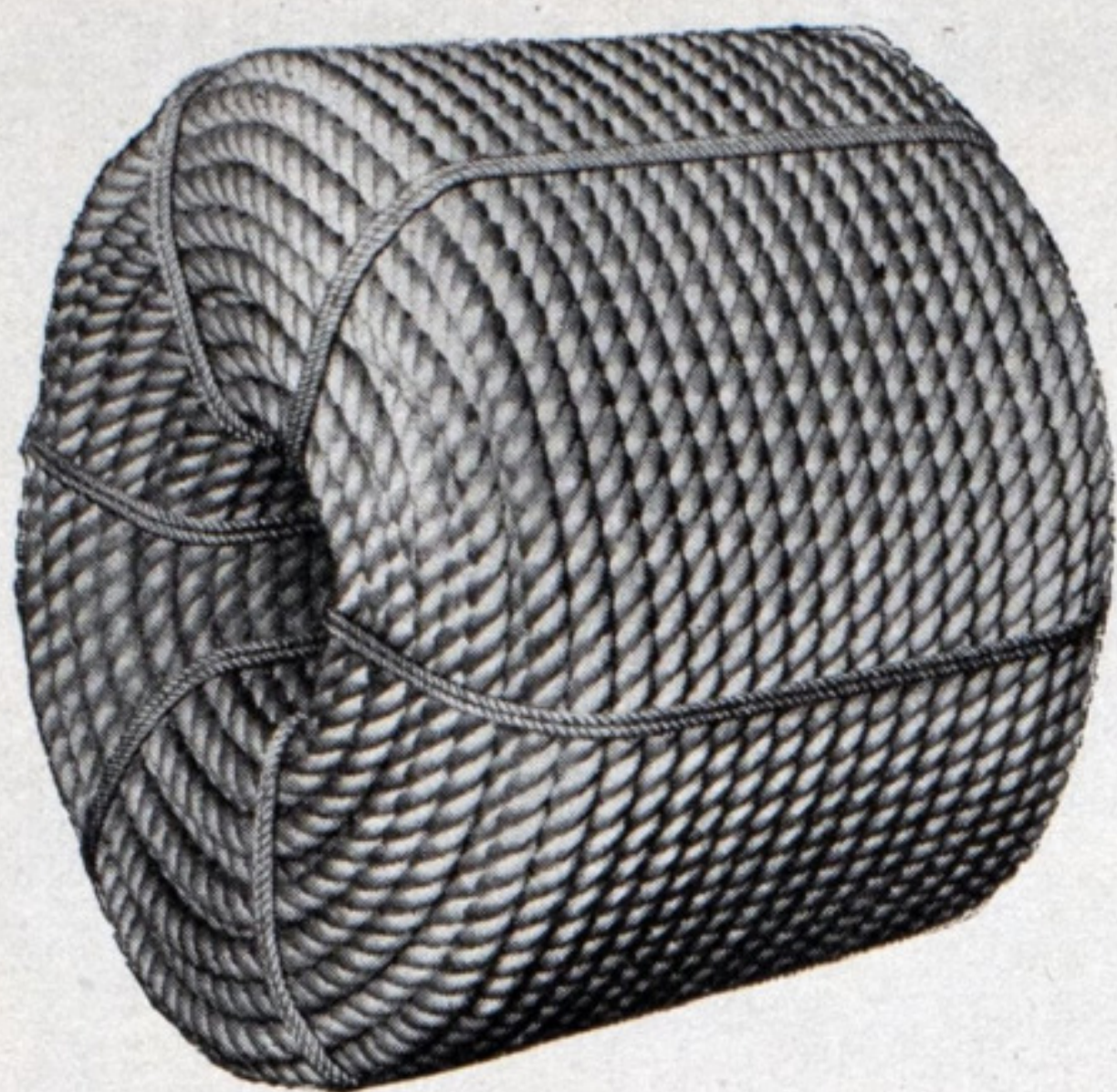
Marine Trust Building BUFFALO, N. Y.

**Kelvin & Wilfrid O. White Co.**

112 State Street, Boston

**Ship Compasses**  
**Navigational Equipment**  
**Contracts a Specialty**  
New York and Montreal





# ROPE QUALITY

THE QUALITY of cordage cannot properly be indicated by any illustration; and in common with certain other commodities and manufactured goods, rope is an article whose worth can be described in words only with much difficulty—and inadequately. It is obvious that rope quality can be (and often *is*) misrepresented by the too-free use of generalities—so that dealers and consumers hardly know *what* to believe.

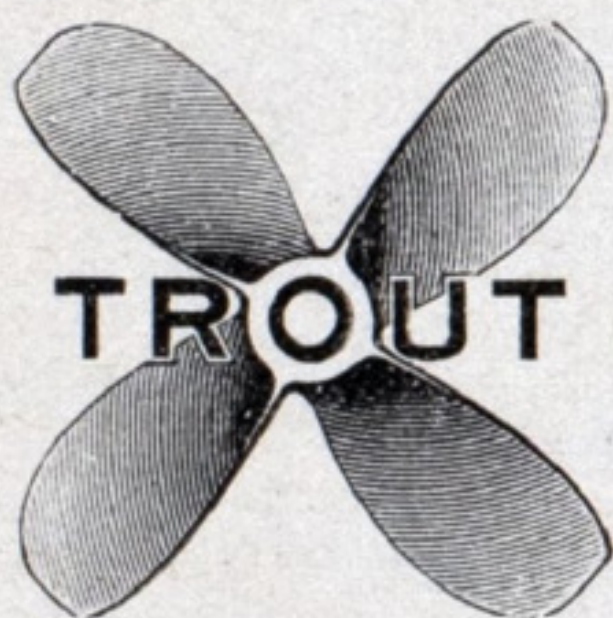
They must depend largely on the reputation of manufacturer and distributor regarding the quality of cordage offered for sale.

The standing of this company for quality products is unexcelled; its high place in the industry is not based merely on a family experience of a century and more in rope manufacturing. The company has been a leader for many years in offering cordage of distinctively high grade, and backs up Whitlock Products as—

## THE UTMOST IN ROPE VALUE

### WHITLOCK CORDAGE COMPANY

46 South Street, New York



#### E. H. READING PROPELLER WHEELS

Machinery Repairs  
226 Ohio St.  
BUFFALO, N. Y.  
Phone Washington 5361

... and now on the 6 new  
"United Fruit" ships

THE great White Fleet's six latest ships—of which the Talamanca is the first—will be Paracoil equipped, as are most of the outstanding American built ships.

**Paracoil**  
MARINE EQUIPMENT

Leading fleet owners have proved the value of this equipment by its past performance. Therefore, on their new ships it is always Paracoil without question.

Paracoil Products are fuel oil heaters, evaporators, lubricating oil coolers, feed water heaters (standard and improved), distillers, water heaters, etc., etc.

Write for bulletins.

#### DAVIS ENGINEERING CORP.

90 West Street New York, N. Y.  
Factory: Elizabeth, N. J.



#### Propeller and Blades

to fit any hub.

Sheriffs Manufacturing Co.  
Established 1854  
Milwaukee, Wis.

## MANITOWOC SHIPBUILDING CORPORATION

Designers and builders of steel passenger and freight vessels, oil tankers, carferries, self unloaders, sand suckers, yachts, dredges, derricks, barges, scows, fire boats, lighters, tugs, marine engines, marine boilers, etc.

Excellent dry docking facilities for quick and economical repairs.

MANITOWOC, WISCONSIN



# DEAN BROS.

## MARINE PUMPS

"The Dean of Pumps  
on Land and Sea"

Single Style & Duplex  
Piston Type & Plunger

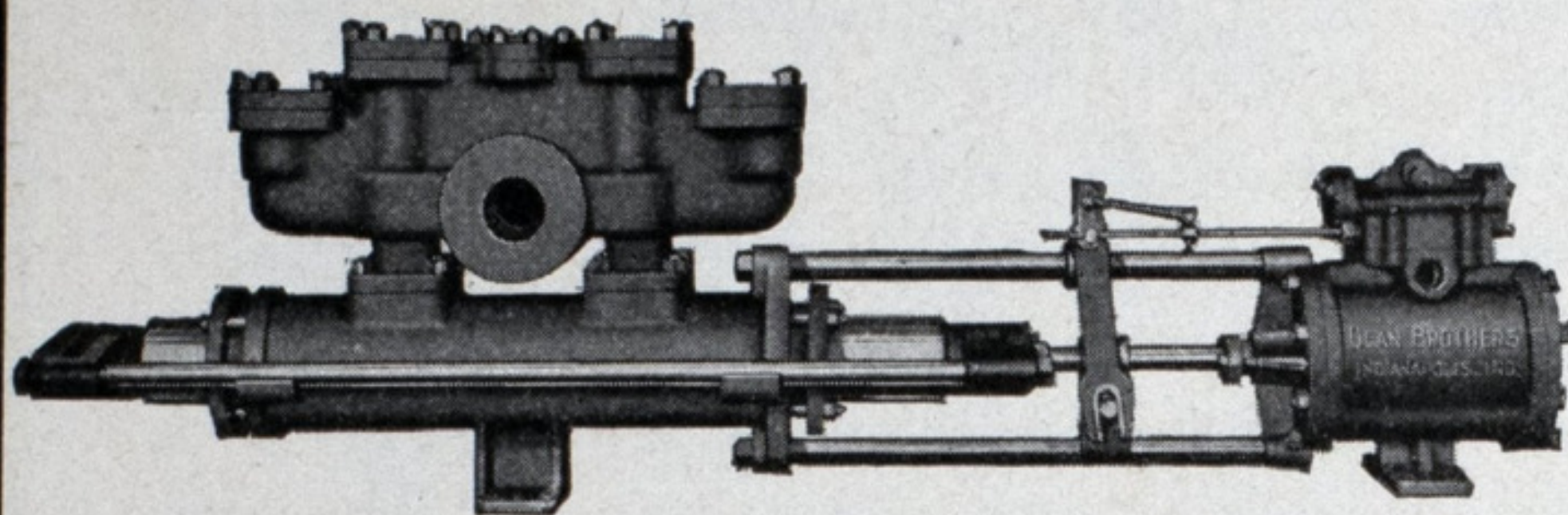


Figure No. 2311 Horizontal Single Style  
Double Acting Outside End Packed Plunger  
Trombone Pot Valve Pump For Boiler  
Feed & Pressure Service.

ESTABLISHED 1869

## DEAN BROS. COMPANY

MANUFACTURERS OF PUMPING MACHINERY FOR ALL PURPOSES

323 WEST TENTH ST.

INDIANAPOLIS IND.

## Star Brass Mfg. Co.

53 Oliver Street -:- Boston, Mass.

MANUFACTURERS OF

Accurate "Non-corrosive" Pressure and Recording  
Gauges, Revolution Counters, Marine Clocks.

Dead Weight Gage Testers.

Marine, Safety and Relief Valves for all pressures.

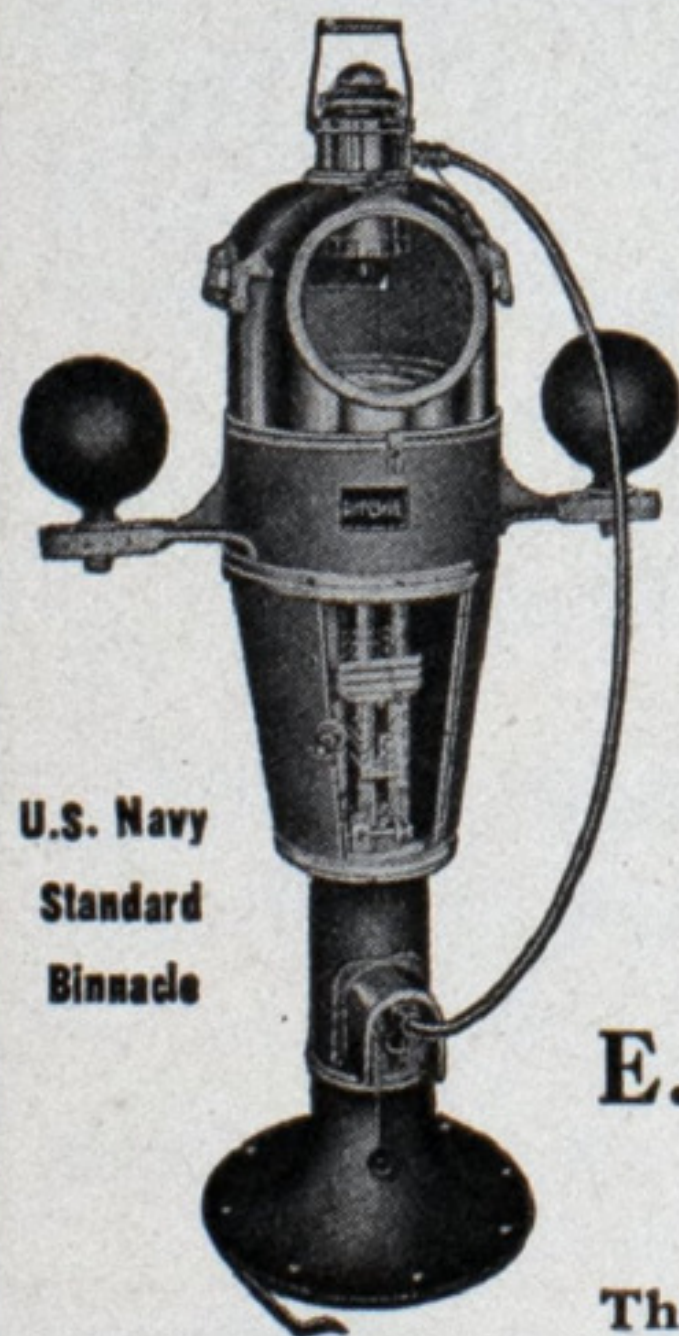
Marine Whistles and Sirens.

Extra Heavy Renewable Globe, Angle and Check  
Valves.

Star Outside Spring Steam Engine Indicators.

HIGH GRADE THROUGHOUT  
SPECIFY AND ORDER THE BEST.

Branches: CHICAGO PITTSBURGH NEW YORK



## THE RITCHIE LIQUID COMPASS

The Standard Liquid Compass the  
world over.

Used Exclusively in U. S. Navy for  
over 40 years.

Over 65,000 on Merchant Vessels in all  
parts of the world.

Made in all sizes 2 to 12" dia.

Magnets for adjusting Purposes.

E. S. RITCHIE & SONS  
Brookline, Mass., U. S. A.

Agents for the Great Lakes,  
The Upson-Walton Company, Cleveland, Ohio



## HAMBURG-AMERICAN LINE

**Passenger Services:** New York to Cherbourg,  
Southampton and Hamburg. New York to Galway, Cobh  
(Queenstown), Cherbourg and Hamburg. North Pacific Ports  
to Hamburg, Bremen and Antwerp via Panama Canal.

**Pleasure Cruises:** Around the world, to the West  
Indies, to Northern Wonderlands.

**Freight Services:** New York to Hamburg (8 days).  
Boston, Philadelphia, Baltimore and Norfolk to Bremen and  
Hamburg.

North Pacific Ports direct to Hamburg, Bremen and Antwerp.

HAMBURG-AMERICAN LINE

39 Broadway

New York

## OLDMAN BOILER WORKS, Inc.

Boilers, Tanks, Stacks, Struc-  
tural Work and Castings

Boiler Repairing Promptly Attended to Day or Night

MARINE WORK A SPECIALTY

ELECTRIC WELDING

Works: 36-40 Illinois Street

BUFFALO, N. Y.

## Classified Advertisements

### FOR SALE

WOODEN TOW BARGE N. C. HOLLAND. 187' Keel 32' Beam 11' 2"  
Depth.

O. W. Blodgett, Bay City, Mich.

### FOR SALE

One General Electric 7 K.W., D.C. Generating Set. For particulars write  
Petoskey Transportation Company, Petoskey, Michigan.

### STEEL SAND SUCKER STEAMER "ERIE"

290 Gross Tons

124' Keel. 28' Beam. 7' Depth.

New Boiler. Two 10 x 12 Vertical Engines. 12" Morris Pump driven  
by 9 x 9 Morris Engines. Splendid condition. Low price. Erie Sand  
& Gravel Company, Erie, Pa.

### FOR SALE

WOODEN TOW BARGE PESHTIGO 201' Keel 37' Beam, 12' Depth.  
O. W. Blodgett, Bay City, Mich.

**FOR SALE—DIESEL PROPELLED LIGHTER 450 TONS CAPACITY,**  
derrick lifts 20 tons, bargain price; also steel steamer 100' x 28' x 8'—  
300 H.P. Equipped for bunkering and freighting. Price \$8500. Address  
Box 424, MARINE REVIEW, Penton Bldg., Cleveland, Ohio.

**WANTED—DIESEL POWERED MOTORSHIP FOR TRANSPORTING**  
refined petroleum products. Capacity approximately 40,000 gallons.  
Write Box 423, MARINE REVIEW, Penton Bldg., Cleveland, Ohio.

**WANTED—PASSENGER AND AUTOMOBILE CARRYING VESSEL,**  
capacity approximately 100 passengers and 15 automobiles. Address Box  
425 MARINE REVIEW, Cleveland, Ohio.

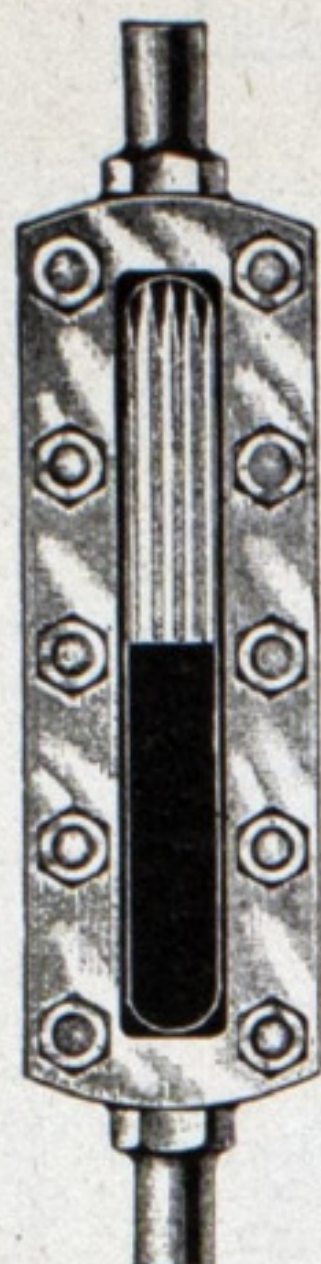
### HAVE YOU A BOAT OR EQUIPMENT FOR SALE?

The classified section of MARINE REVIEW is for your convenience  
—its value is proving worthwhile to everyone who uses it to buy  
and sell.

If you want to buy or sell ships or marine equipment—need a man  
for your organization—make it known to the entire marine industry  
through the use of classified advertising in MARINE REVIEW.

Mail copy for your advertisement in the April issue today, so it reaches  
us before March 20.





## REFLEX WATER GAGES

Used on all types of boilers by all the Principal Navies of the world

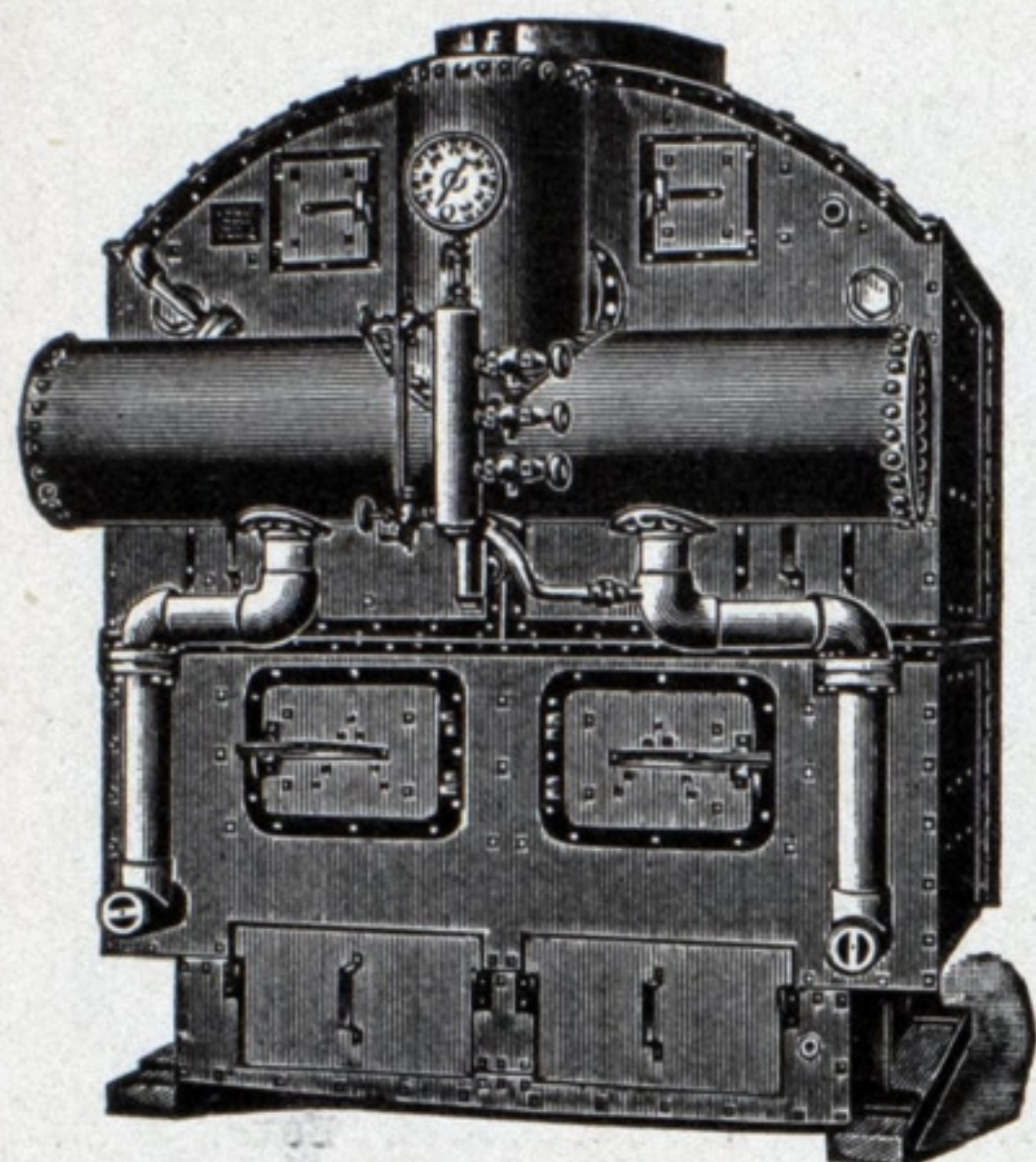
**"The Water Shows Black"**

**ADVANTAGES:** Quick and reliable observation of the water level. Safe, sure and durable at high pressure. Not affected by cold air drafts. Most effective protection against injuries to boilers and workmen. Easily applied to all types of gage glass fittings.

When filled with WATER the Reflex Gage always appears **BLACK**. When empty it instantly shows **WHITE**. No mistake possible. This feature alone is worth many times the cost of the Reflex.

Send for catalog of Water Gage Apparatus

MANUFACTURED BY THE  
**JERGUSON  
GAGE & VALVE CO.**  
WINTER HILL, SOMERVILLE, MASS.



CATALOGUE FREE

## Almy Water Tube Boiler Co.

Builders of  
Sectional Water  
Tube Boilers  
for all types of  
vessels

Providence, R. I.  
U. S. A.

## SAMSON SPOT Log Lines

Smooth, tough and durable; no adulterating material to stiffen it and decrease strength and durability. Solid braided of extra quality cotton yarn. Uniform in size and quality. Easily identified by the colored spots, our trade mark.

We also manufacture flag halyards, lead lines, tiller rope; solid braided cotton cord in all sizes for various marine uses. Ask for catalog and samples.



Trade Mark  
Reg. U.S.  
Pat. Off.



## SAMSON CORDAGE WORKS

89 BROAD STREET

BOSTON, MASS.

# Have you secured your copy of "The Marine Market"?

*Some of the facts it  
covers are:*

Five page review of what may be expected of the marine market. Compilation of mail contracts awarded.

Present shipbuilding activities and figures showing growth of the industry.

Five pages with tables and graphs showing age of American merchant vessels.

A breakdown of the requirements of this billion dollar market as to products required.

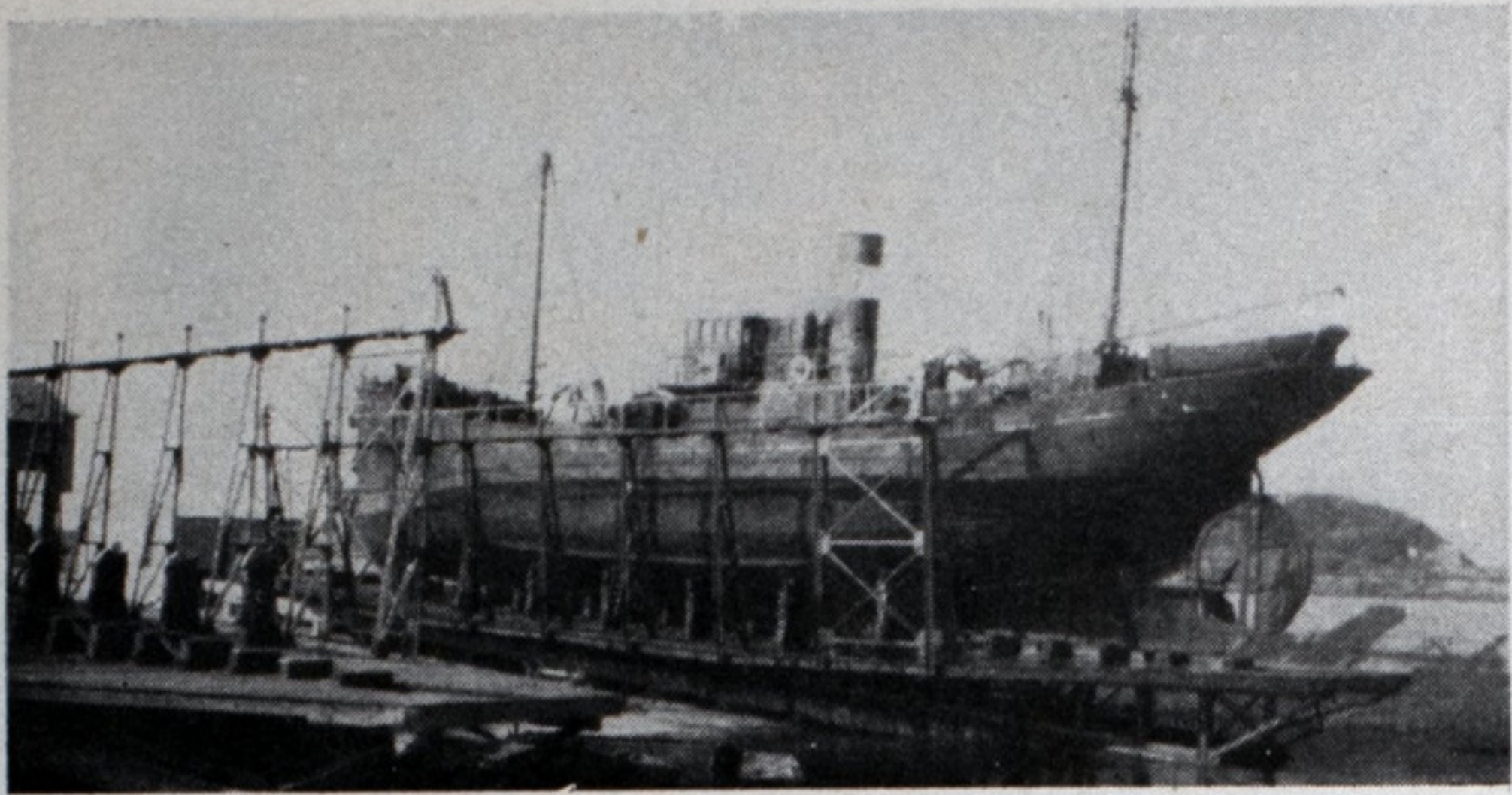
For a number of years we have annually surveyed the marine industry and made our findings available to those serving this industry.

The 1931 survey under the title "The Marine Market" has just been completed and we believe will prove interesting and helpful to you in the planning of your sales and advertising activities for 1932.

Just let us know you would like a copy and we shall gladly forward it to you at once.

Address Marine Review—New York or Cleveland





## OSTENDE . . . RAILWAY DRY DOCKS

Two Railway Dry Docks recently completed for the Belgian Government in the new fishing port at Ostende.. a further acknowledgment of their utility and economy.

**THE CRANDALL ENGINEERING CO.**  
CAMBRIDGE, MASSACHUSETTS • U. S. A.

## FLOORS

**SELBALITH CUSHION COAT**  
to receive rubber or cork tile or linoleum

**SELBALITH HARD FINISH**  
for staterooms and service spaces

**SELBALITH TILE**  
for smoking rooms, passageways and lobbies

**GOODYEAR RUBBER TILE**  
the aristocrat of decorative floors

**TILETEX**  
asphalt tile plain and mottled colors

**AND ELEVEN OTHER TYPES**  
including cork, vitreous and ceramic tiles

**SELBY, BATTERSBY & COMPANY**  
*Floorcrafters*

Philadelphia  
33d & Arch Sts.



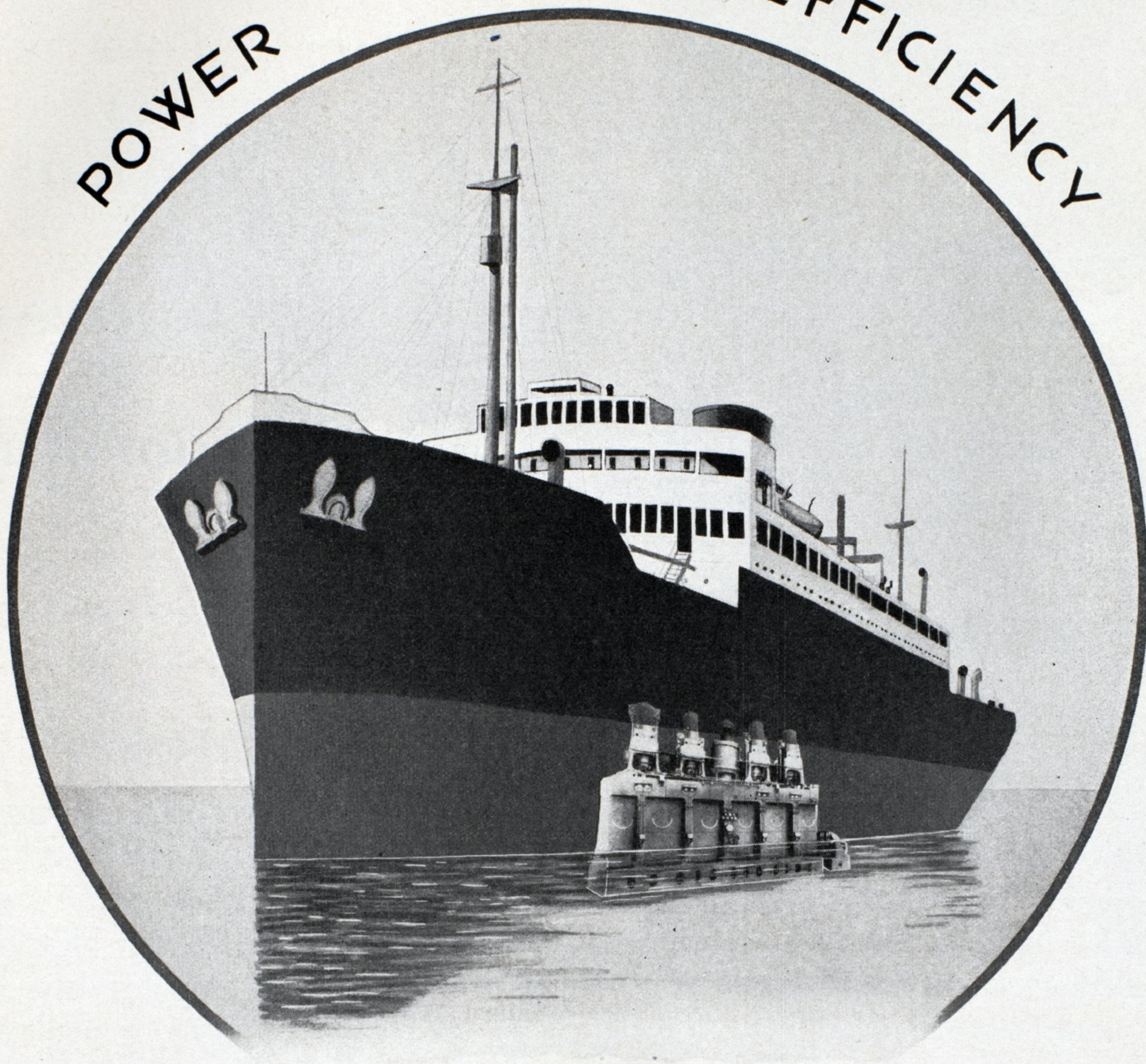
New York City  
135 Liberty St.

## INDEX TO ADVERTISERS

Almy Water Tube Boiler Co. ....	47
American Locomotive Co. ....	—
American Ship Building Co. ....	7
Babcock & Wilcox Co. ....	—
Bethlehem Shipbuilding Corp., Ltd. ....	—
Boland & Cornelius ....	44
Columbian Rope Co. ....	Inside Back Cover
Cooper-Bessemer Corp., The ....	—
Chas. Cory Corp. ....	—
Cramp Brass & Iron Foundries Co. ....	Back Cover
Crandall Engineering Co. ....	48
Davis Engineering Corporation.....	45
Dean Brothers Co. ....	46
De Laval Steam Turbine Co. ....	—
Diehl Mfg. Co. ....	Front Cover
Electric Storage Battery Co. ....	3
Export Fibreboard Case Assoc. ....	—
Fairbanks, Morse & Co. ....	4
General Electric Co.....	—
Hamburg-American Lines ....	46
Hyde Windlass Co. ....	Back Cover
Isherwood, Sir Joseph W., Ltd. ....	45
Jerguson Gage & Valve Co. ....	47
Kearfott Engineering Co. ....	—
Kelvin & Wilfrid O. White Co. ....	44
Lane, C. M., Lifeboat Co., Inc. ....	44
Manitowoc Shipbuilding Corp. ....	45
Morse, Andrew J., & Son, Inc. ....	44
New York Shipbuilding Co. ....	Inside Front Cover
Oldman Boiler Works, Inc. ....	46
Reading, E. H. ....	45
Ritchie, E. S., & Sons.....	46
Samson Cordage Works ....	47
Selby, Battersby & Co. ....	48
Sharples Specialty Co., The.....	—
Sheriffs Manufacturing Co. ....	45
Star Brass Mfg. Co. ....	46
Sun Shipbuilding & Dry Dock Co. ....	47
Troy Engine & Machine Co. ....	—
Westinghouse Air Brake Co. ....	50
Westinghouse Electric & Mfg. Co. ....	43
White, Kelvin & Wilfrid O., Co. ....	44
Whitlock Cordage Co. ....	45
Wickwire Spencer Steel Co. ....	8
Yale & Towne Mfg. Co., The ....	44



POWER WITH EFFICIENCY



*“The Heart of the Ship”*

## **SUN DOXFORD OPPOSED PISTON DIESEL OIL ENGINES**

PASSENGER AND CARGO VESSELS  
TANKERS (Steam or Motor)

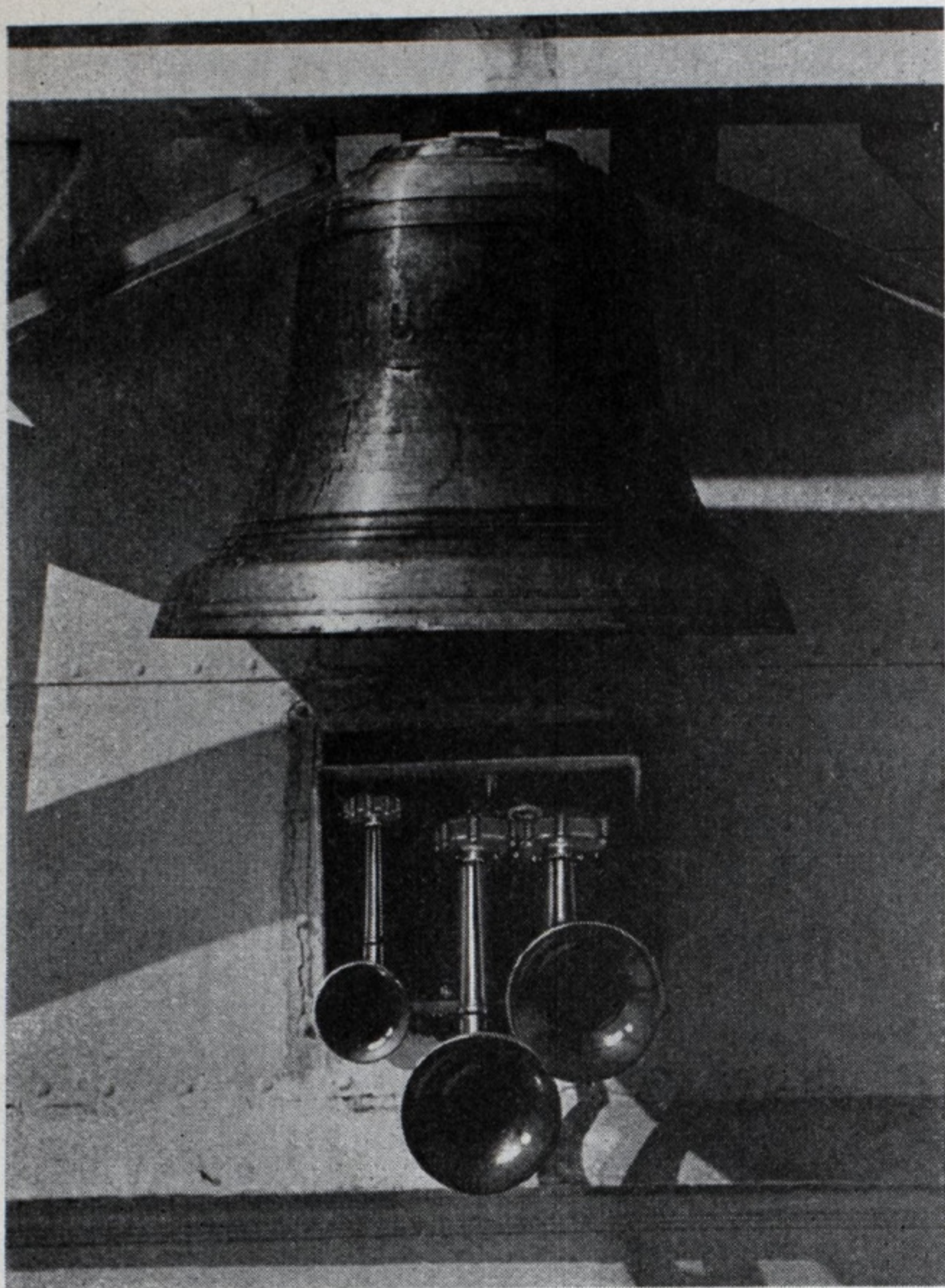
We also have drydocks and facilities for  
**MARINE REPAIRS**

# **SUN SHIPBUILDING & DRY DOCK CO.**

NEW YORK OFFICE  
25 Broadway

Plant and Office  
CHESTER, PA.





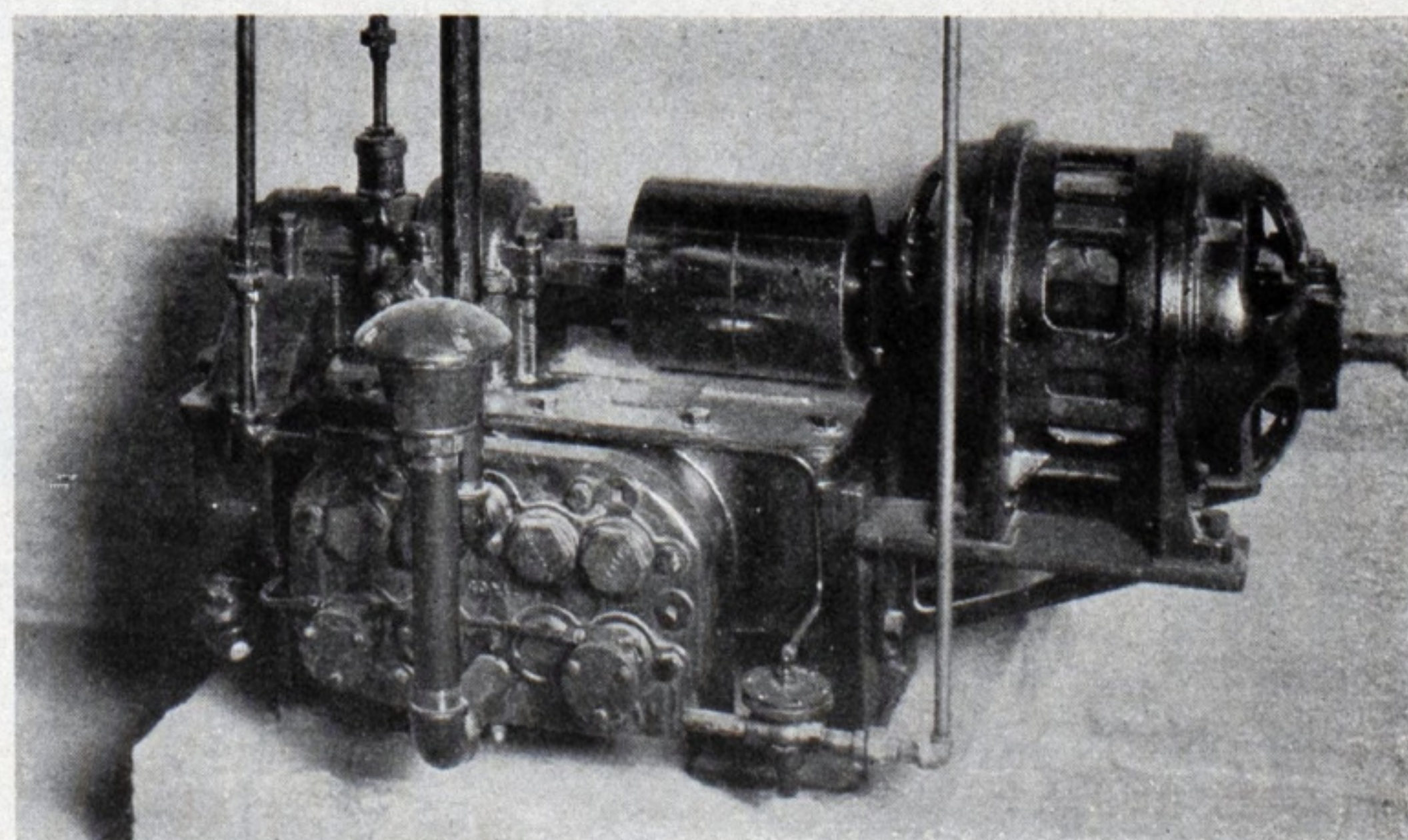
*A Fog Signal,  
Powerful—Positive—  
Reliable—Economical*

**WESTINGHOUSE PNEUPHONIC HORNS—**

air operated, are used extensively in marine service for a great variety of signal purposes—the small single bell type for light craft such as patrol boats or yachts, the double chime horn for larger boats, and the multiple combination of large horns for light houses and other shore warnings . . . This horn emits a pleasing sound that can be heard distinctly for miles. It is positive in action by virtue of its counterbalanced diaphragm (a patented feature) and blasts can be made in quick succession when desired. The construction is very simple and reliable action is assured. Economy is another outstanding characteristic as the horns are easily installed, need no adjustment, and require very little air for their operation.

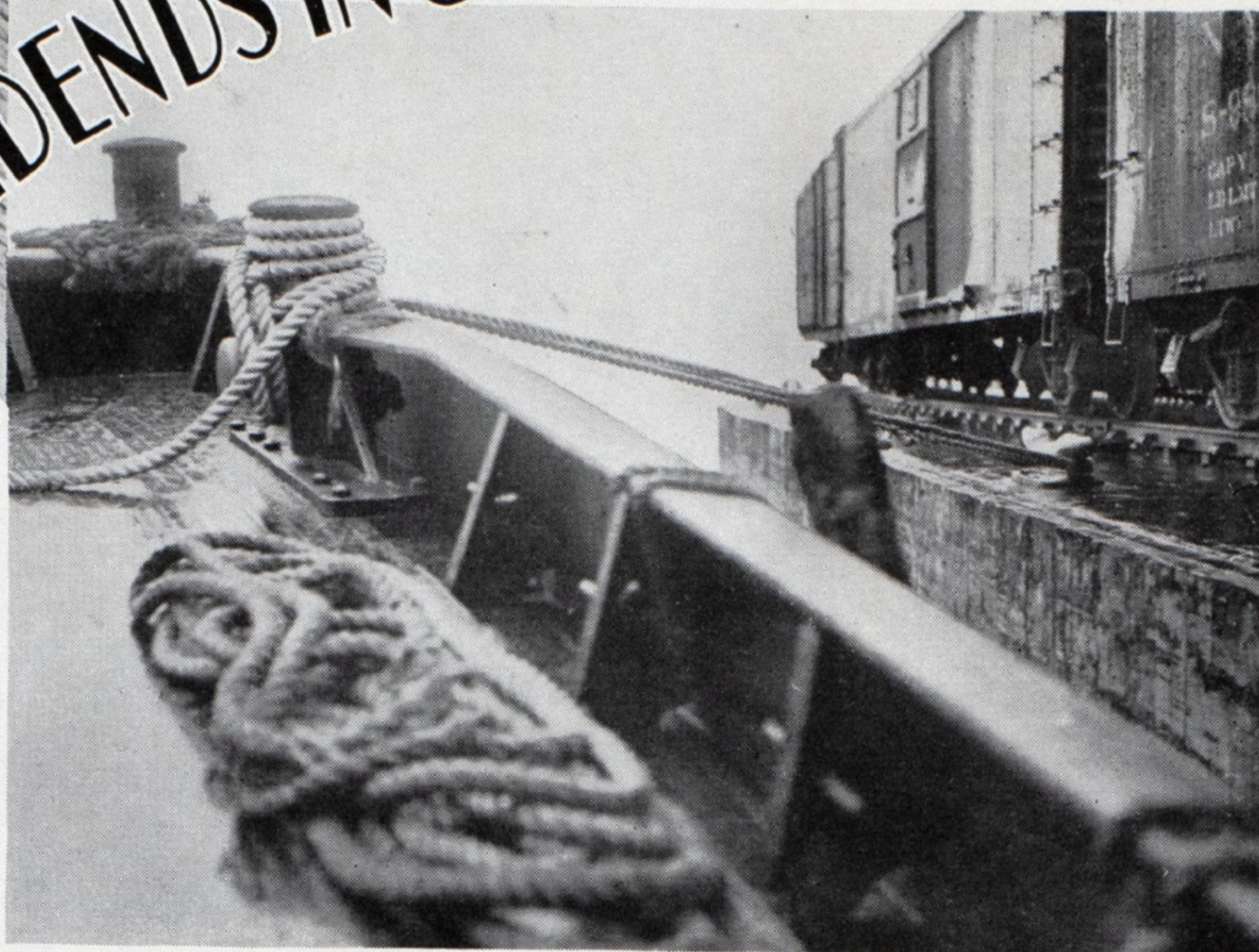
**WESTINGHOUSE TRACTION BRAKE CO., Industrial Division, Pittsburgh, Pa.**

*The air compressor illustrated is the Westinghouse, Type N, that furnishes air for operation of the Pneuphonic Horns in light house service, shown above. Westinghouse air compressors are available in many types and sizes ranging from 2½ to 300 cu. ft. displacement for all classes of marine service.*





PAYING DIVIDENDS IN SERVICE



IN harbor towing, the quality of a line is convincingly demonstrated. Columbian *Tape-Marked* Rope plainly shows the stuff it is made of by giving extra-long service.

There is every reason to expect long service from Columbian. It is made from fibre personally selected by Columbian fibre buyers in the Philippines. The latest rope making machinery produces as nearly 100% perfect rope as can be made. It is a modern rope, containing improved, modern features. It is the easiest rope to handle when wet because the exclusive Columbian waterproofed qualities render it always flexible.

Regardless of the usage to which Columbian *Tape-Marked* Rope is subjected it pays dividends in terms of long, dependable service. Operators who demand their money's worth are using Columbian exclusively. Take a few coils of Columbian aboard and check its service with any other line.

COLUMBIAN ROPE COMPANY

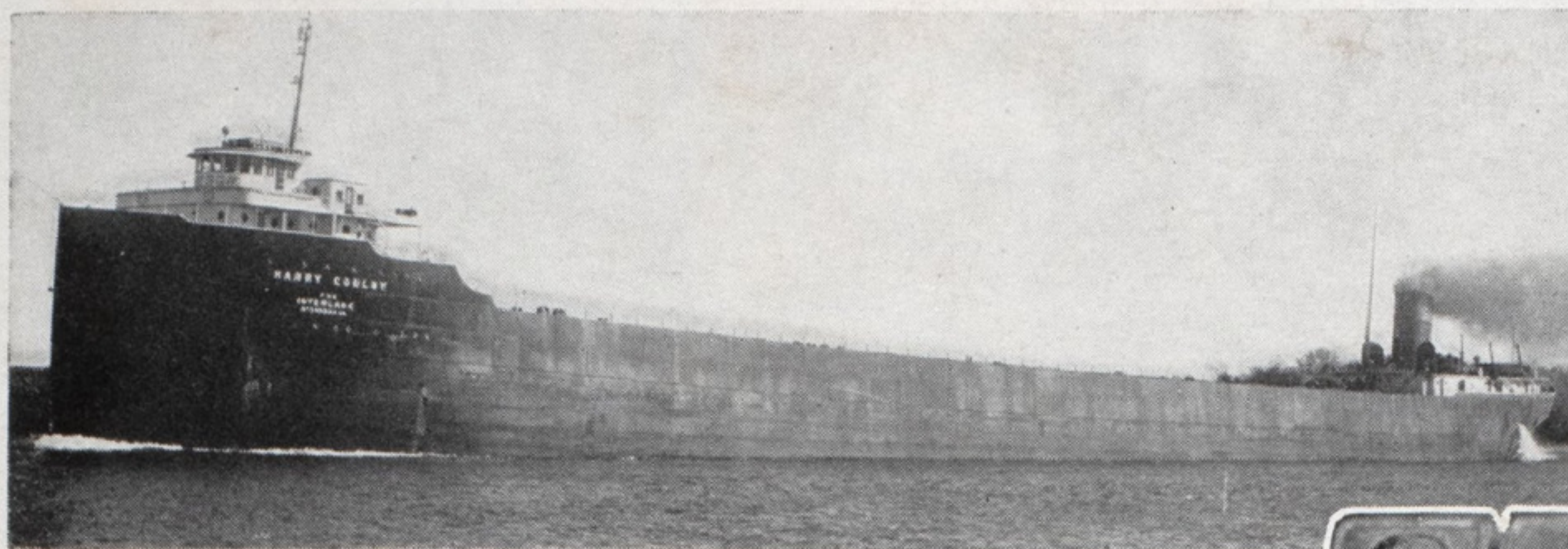
332-90 Genesee Street, Auburn, "The Cordage City," N. Y.

Branches:— New York Chicago Boston New Orleans

**COLUMBIAN** TAPE MARKED  
PURE MANILA **ROPE**

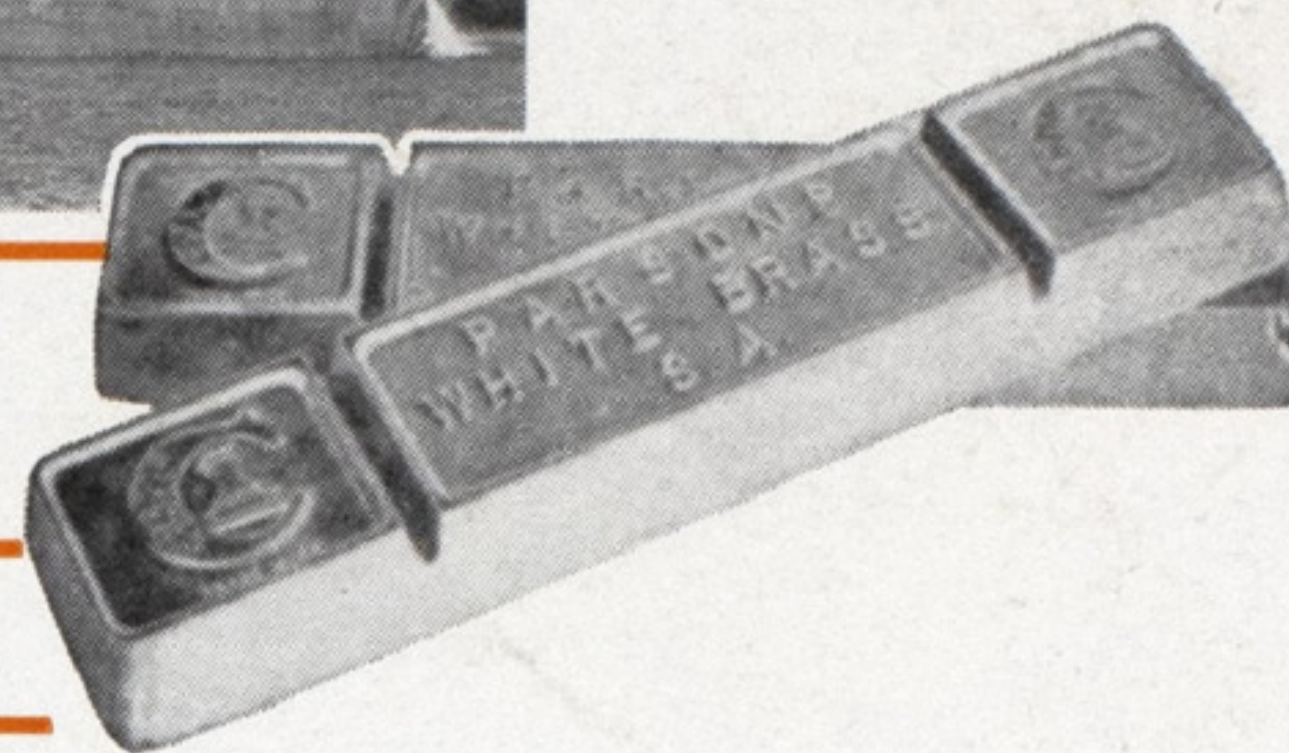


S.S.  
Harry  
Coulby



## PARSONS' WHITE BRASS S.A.

KEEPS BEARINGS IN SERVICE LONGER



S. S. HARRY COULBY, the Queen of The Interlake Steamship Company fleet operated by Pickands, Mather & Company, is most elaborately equipped. Nothing has been left undone that would add to her dependability.

PARSONS' WHITE BRASS S.A. is used to keep bearings in service longer and to save an expensive trip to the shipyard for bearing replacement. This super bearing metal has a higher elastic limit under compression and a higher melting point. It is *your* assurance of better service from babbitting in journals, connecting rods, cross heads, eccentric straps and other parts of the ship.



**CRAMP BRASS & IRON FOUNDRIES CO.**

Paschall Station, Philadelphia

If You Want The Best Specify

# Hyde

S. S. "A. F. HARVEY" owned by Pittsburgh Steamship Co. and built by Great Lakes Engineering Works.

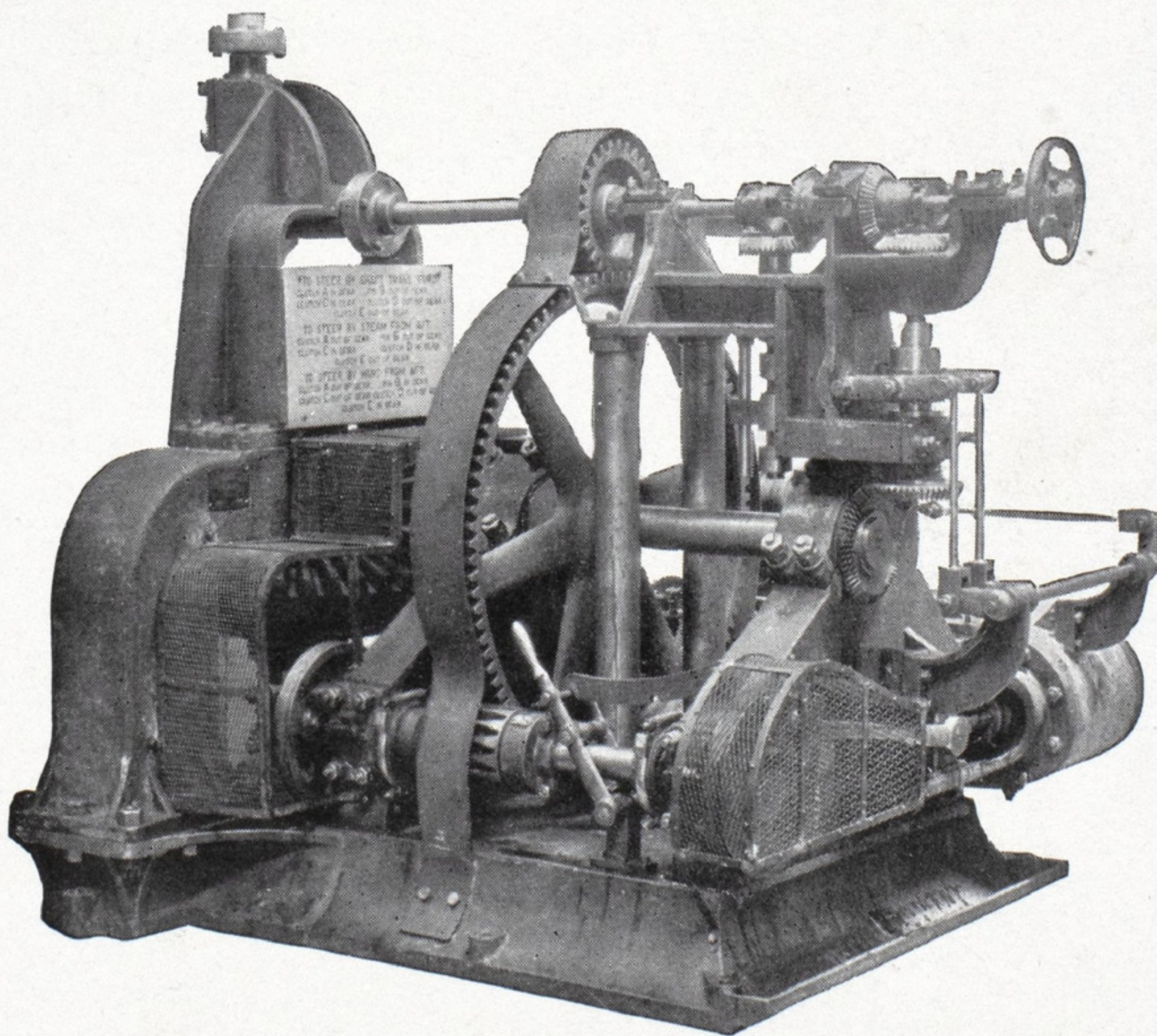
S. S. "B. F. AFFLECK" owned by Pittsburgh Steamship Co. and built by Toledo Shipbuilding Co.

S. S. "S. T. Crapo" owned by Huron Transportation Co. and built by Great Lakes Engineering Works.

These three fine new boats  
are all equipped with

# Hyde

Quadrant Type  
Steering Gear  
Spur Gear Windlass  
Mooring Winches  
Hatch Winches



HYDE Quadrant Type Steering Gear

# Hyde Windlass Company

Bath, Maine